NOVEMBER 6, 1952

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SEVENTY-NINTH YEAR OF PUBLICATION

Multiple-spray bar applies dust suppressant for lower cost irrigation canal linings (page 35)

★ PRECAST RIGID-FRAME WAREHOUSE

★ [illegible] TO DRAINAGE

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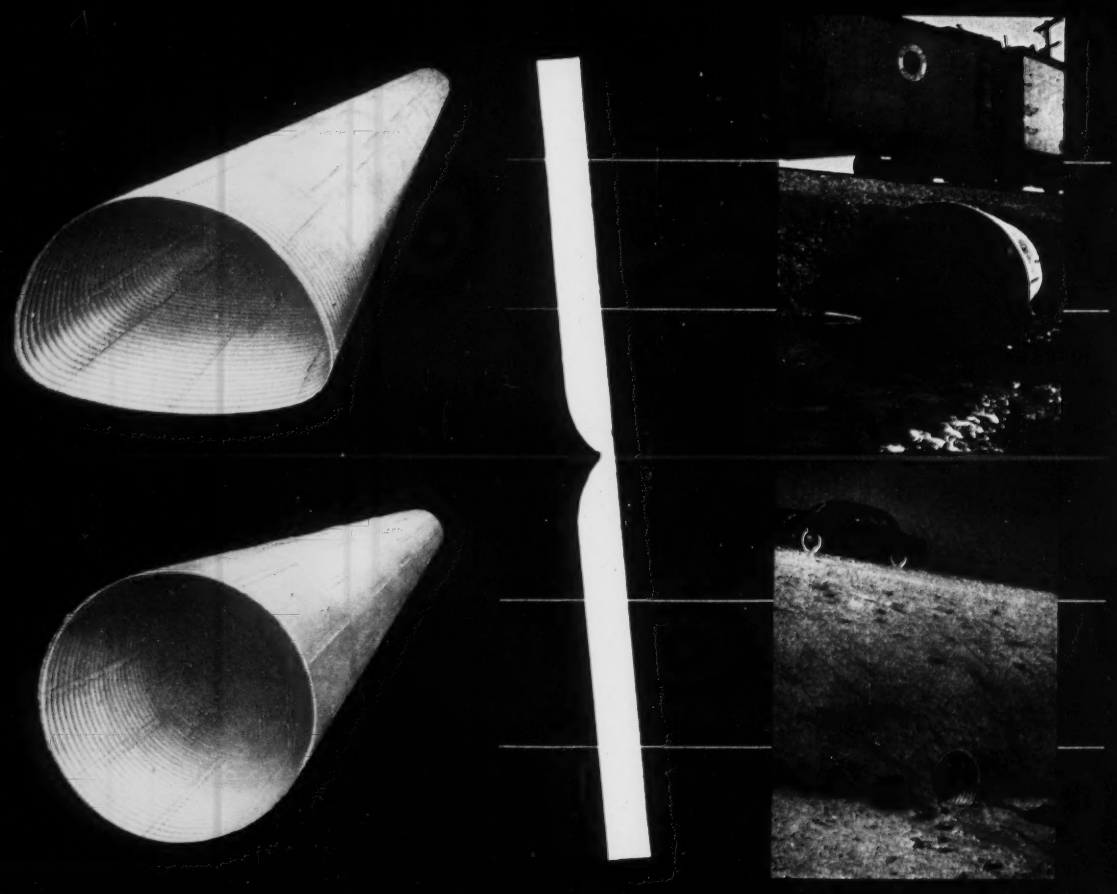

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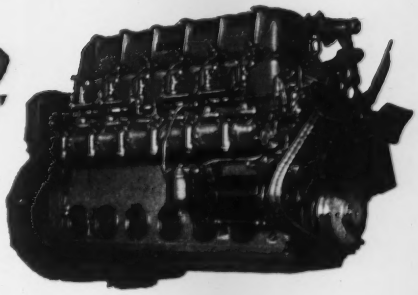

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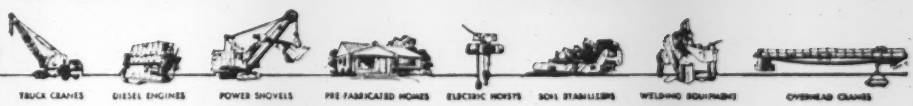

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Number of copies of this issue printed: 60,831

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Robert F. Boger
Publisher

November 5, 1953 ENGINEERING NEWS-RECORD Vol. 151, No. 19

Member: ABC and ABP

Published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. **Publication Office, 99-129 North Broadway, Albany 1, N. Y.**

Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions: Address correspondence to Engineering News-Record—Subscription Service, 99-129 North Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.

Subscriptions are solicited only from persons with an identifiable commercial or professional interest in construction and building. Position and company connection must be indicated on subscription orders.

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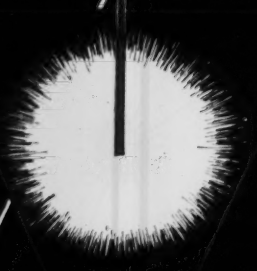

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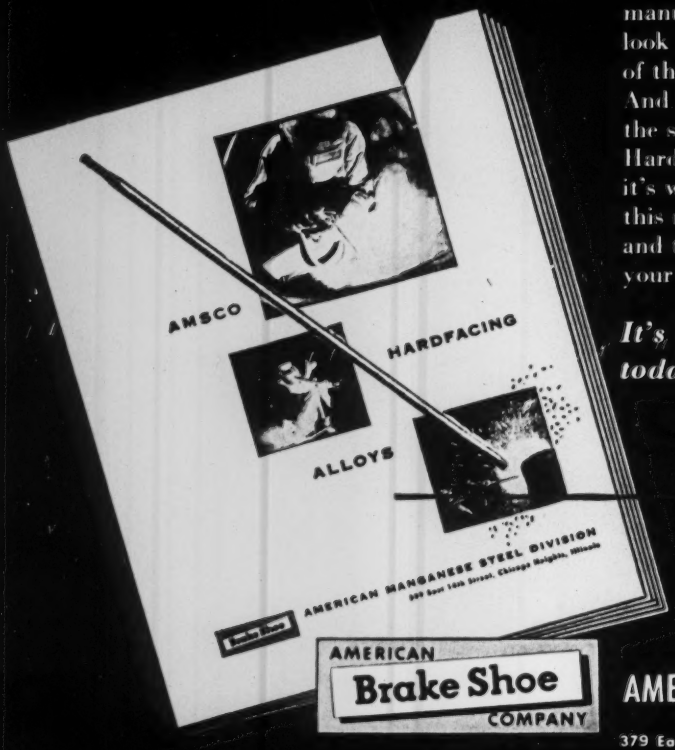
Whatever the application, whenever you are in doubt about what hardfacing alloy to use, you can reach for the new Amsco Catalog for the answer. It gives you complete analyses, metallurgical information, and other pertinent data about Amsco's line of automatic and manual hardfacing alloys. You can look up the right rod to use for hundreds of the more common applications. And for those extra tough jobs, you'll find the section on How to Select a Hardfacing Alloy indispensable. Although it's written by welding engineers, this new catalog is easy to understand and to apply its suggestions to your own operations.



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PEDESTRIAN BRIDGE for Mt. Carmel High School, Lawson, Kentucky. This is one of the smallest suspension bridges designed and fabricated by American Bridge in many years. Structure was erected by the faculty and students of the school.

Study in Extremes
by
AMERICAN BRIDGE

SAN FRANCISCO-OAKLAND BAY BRIDGE fabricated and erected by American Bridge is the world's greatest. It is 8½ miles between terminals of which 4½ miles is steel superstructure over San Francisco Bay.

MOST people associate American Bridge with *big* bridges. And that's understandable, for they're the ones that make the headlines.

But, American Bridge also builds small bridges. In fact, we have recently designed and fabricated a part of an exceptionally small suspension bridge. We show it here. And to give you a better idea of the wide variety of our work, we also show a picture of the famous San Francisco-Oakland Bay bridge, the world's greatest bridge.

What a study in extremes! The little pedestrian bridge is only 402′ 7½″ long and 6′ wide, while the main structure for the tremendous San Francisco-Oakland Bay bridge is 22,720′ long. It has two main suspension spans, each 2,310′ long. The main span of the tiny foot bridge measures but 244′ 7½″! The total weight of the smaller structure is approximately 25 tons; steel for the larger job weighs 201,000 tons!

Contrasting these two bridges is just another way of saying that no bridge is too large or too small for American Bridge. We have the fabricating facilities, erecting equipment and technically trained personnel to handle any type of steel construction with exacting precision, thoroughness and speed . . . any time, anywhere. For detailed information regarding your requirements, call our nearest office.

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The new sound and color motion picture *Building for the Nations*—a candid, factual photographic record of the highlights of the fabrication and erection of the United Nations Secretariat Building in New York is now available for free showing in churches, schools, clubs and industries. For bookings, write Pittsburgh office.

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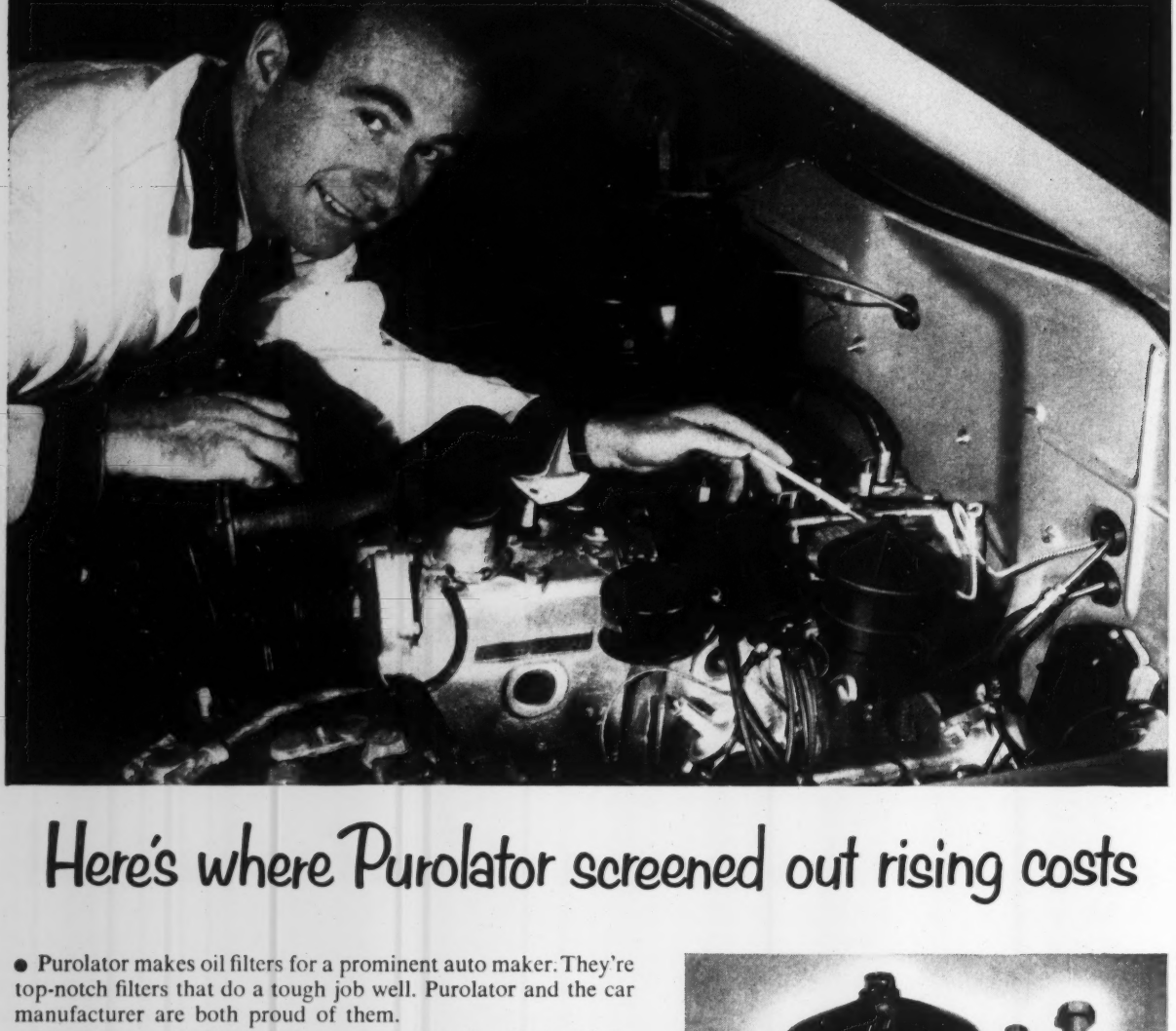


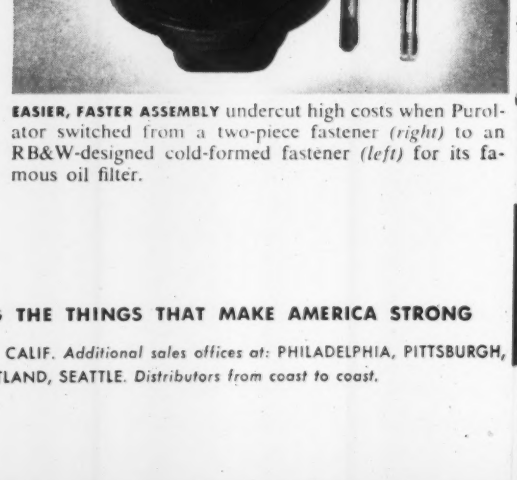
Here's where Purolator screened out rising costs

● Purolator makes oil filters for a prominent auto maker. They're top-notch filters that do a tough job well. Purolator and the car manufacturer are both proud of them.

Not long ago an RB&W "fastener engineer" got loose in the Purolator plant—just when company production executives were looking for a way to lick rising costs. He noticed that the Purolator filter was being assembled with a two-piece fastener made slowly and laboriously on a screw machine.

Our man told the Purolator people about RB&W's batteries of cold-forming machines. Purolator wanted to know more. Now their filter is assembled with a one-piece RB&W fastener that costs far less to make and assemble.

Chances are you can find a stage in your operations where RB&W "fastener engineering" can help you keep costs in line. As a leading manufacturer of all kinds of fasteners, we're always able to recommend and supply the right ones for all your needs. Write RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY, Port Chester, N. Y.



EASIER, FASTER ASSEMBLY undercut high costs when Purolator switched from a two-piece fastener *(right)* to an RB&W-designed cold-formed fastener *(left)* for its famous oil filter.

RB & W

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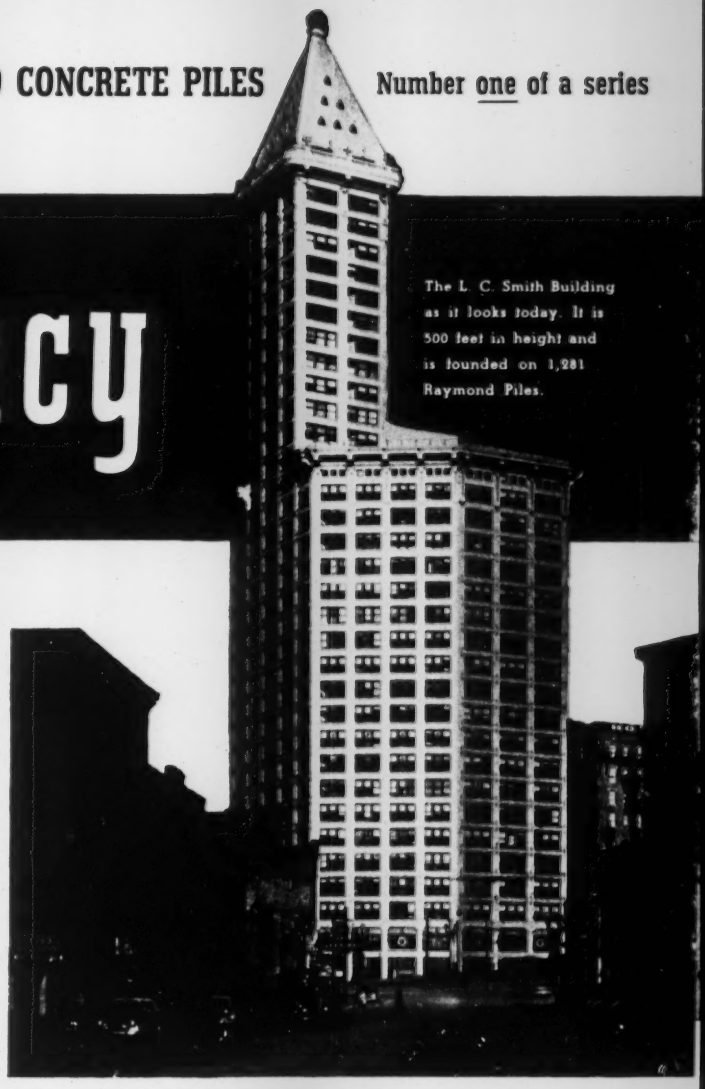

The L. C. Smith Building as it looks today. It is 500 feet in height and is founded on 1,281 Raymond Piles.

IN 1912 the first Raymond Concrete Piles were driven for one of the country's earliest skyscrapers . . . the 42-story L. C. Smith Building in Seattle. Today, 41 years later, the L. C. Smith Building, towering high above Seattle's skyline, is still the tallest building on the Pacific Coast . . . exemplifying the fact that when you specify Raymond Piles you can be sure of a firm and permanent foundation.

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◀ Two Raymond rigs driving piles for the L. C. Smith Building in Seattle in May, 1912.

Mountain moved to make 5000 ft. breakwater for west-coast harbor in Mexico

To better protect the harbor at Ensenada, one of Mexico's few Pacific-coast ports, a fleet of modern earthmoving equipment is rushing completion of a giant breakwater. Made of blasted rock and sandstone, this structure will extend 5,000 ft. into the sea. It will average 130 ft. wide and reach several feet above sea level (the water is over 50 feet deep in many spots).

Owned by Clark and Mansilla Co., Ensenada, 6 rear-dump Tournarockers are handling 85% of the yardage for this project. Several times a day, sandstone rock is blasted from a mountain near the water's edge. This jagged material is shovel-loaded into the Tournarockers, hauled to the end of the growing breakwater, and dumped into the sea.

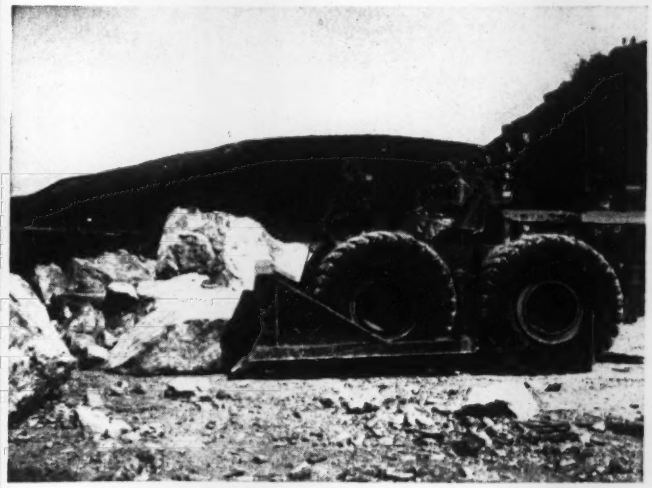
Drive over rocky fill, dump safely

The haul road is naturally very rough and bumpy because it passes over previous fill that is 80% blasted rock. Giant tires, 4-wheel air brakes, and independent positive power steer make it safe for Tournarockers to travel this long "finger" far out into the ocean. Loaded with 12 yds. of sandstone, Tournarockers with their big rubber tires compact the fill during normal cycles.

The 6 machines work two 8½-hour shifts daily, 6 days

Tournarockers' wide bowl and low rear entry for dipper give shovel operator an easy-to-hit target; allow him to load faster with shorter swings, less spillage. With big, odd-size rocks to handle, 2½-yd. shovels averaged 2.4 minutes to load.

Clark & Mansilla's Tournatractor handles both clean-up work on the breakwater and haul road maintenance. Four-wheel drive on big low-pressure tires puts plenty of power and traction behind the blade to shove huge rocks like this into the bay.



When bank consists of big, jagged pieces of sandstone like this, competitive rear-dump trucks, assigned 15% of total yardage, stand idle. Some of the rocks handled by the Tournarockers measured 5 x 6 x 12 ft. and weighed over 30 tons.

A touch of an electric switch on operator's panel dumps rocky fill into the ocean 10 ft. below the top of the breakwater. Independent brakes on front and rear wheels allow operator to back safely to the edge of the bank, lock rear wheels, roll front wheels back to dump clear.

per week. Each delivers 60 pay yds. per 50-minute hour, traveling over 5200-ft. cycles. Individual trips average 7.7 minutes (including 2.4 minutes to load).

In spite of delays for blasting, and difficulties in shovel-loading large and awkwardly-shaped rocks, Tournarockers' dependability and fast haul speeds are helping to keep work on schedule. "Our Tournarockers are very good machines," say owners Clark and Mansilla. "They are doing an excellent job on this breakwater project. We are amazed at how well they stand up under the rough conditions we work in."

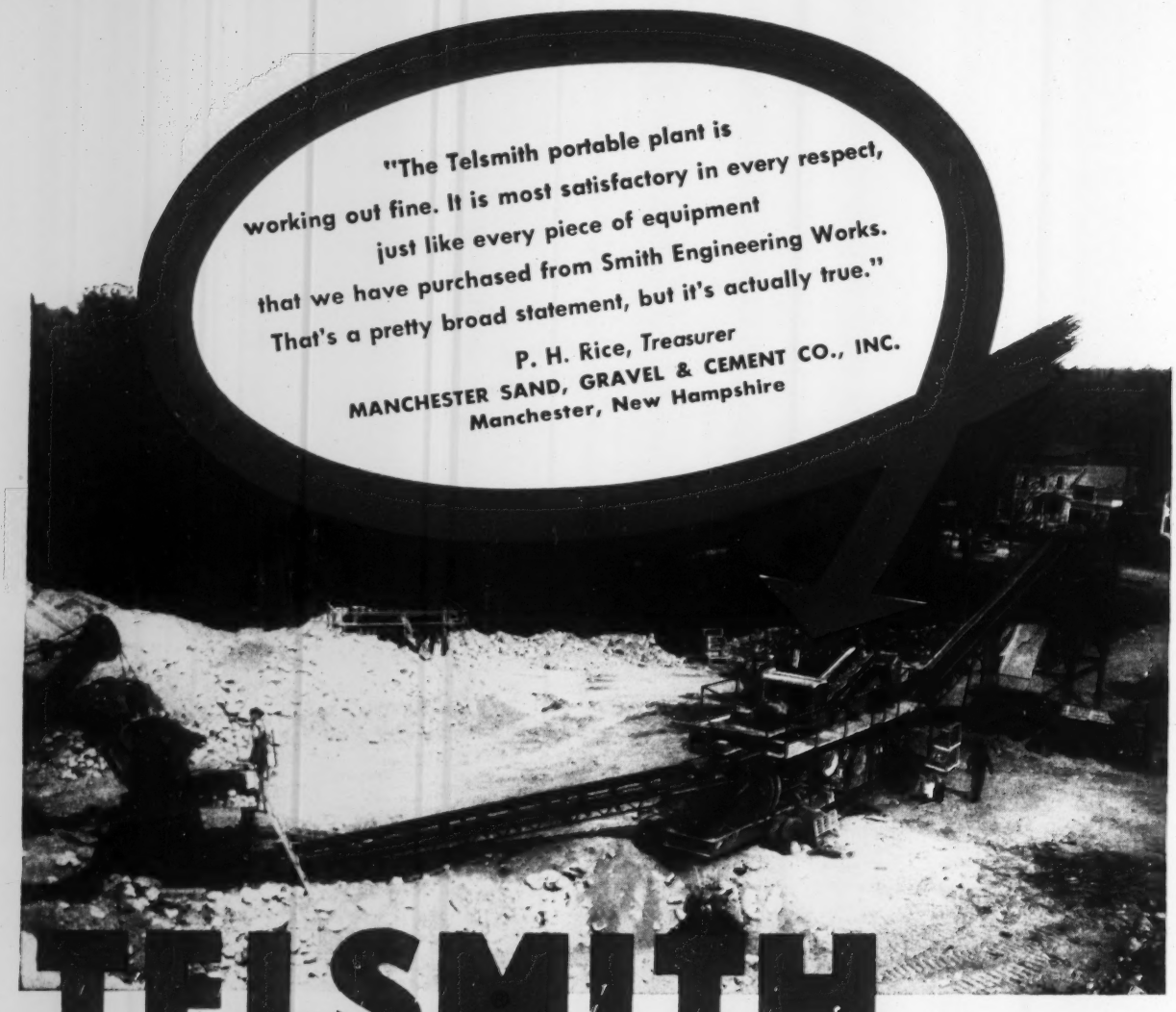
Pleased with service

Capt. Ignacio de la Vega, who is in charge of all operations, says that he is pleased with the equipment and with the service and cooperation he gets from his LeTourneau-Westinghouse Distributor (Crook Company of Los Angeles and Bakersfield).

Tournarockers' fast speeds, rugged construction, and easy-to-operate "push-button" controls, plus excellent repair and parts service, could make a big difference in production figures on your work, too. Write for more information or an on-the-job demonstration.

Tournarocker—Trademark Reg. U.S. Pat. Off., Tournatractor—Trademark RT-493-D

LeTourneau-Westinghouse Company | PEORIA, ILLINOIS


"The Telsmith portable plant is
working out fine. It is most satisfactory in every respect,
just like every piece of equipment
that we have purchased from Smith Engineering Works.
That's a pretty broad statement, but it's actually true."
P. H. Rice, Treasurer
MANCHESTER SAND, GRAVEL & CEMENT CO., INC.
Manchester, New Hampshire

TELSMITH PORTABLE PLANTS

Along the new Frederick E. Everett Highway... Manchester Sand, Gravel & Cement Co., Inc. is producing minus 1½" crushed bank gravel (50% to be retained on ¼" screen) for 2½ miles of this 40-mile central New Hampshire turnpike. Material was used as a crushed gravel base course. The crushing plant—a 9-C Telsmith Dual Portable—produces about 125 cu. yds. per hour.

"In a normal pit I would expect about 150 yds. per hour," says Mr. P. H. Rice, "but this deposit is most unusual... we were crushing about 60% of the material. Several parts of the pit seemed to have about 80% stone."

Telsmith Portable Crushing and Screening Plants are noted for their greater capacity and dependable, low-cost operation.

The Telsmith Portable shown is a ***9-C Dual*** with 10" x 36" jaw crusher, 30" x 18" rolls and 4' x 10' 2½-deck screen. Made in other popular sizes. Get Bulletin 276.

P-19

SMITH ENGINEERING WORKS, 500 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

READER COMMENT

Double parking elevator

SIR: In ENR Oct. 8, p. 75, you show pictures of Pigeon Hole Parking Company's installations in Spokane, Wash. In the write-up accompanying these photos, the last paragraph reads as follows:

"The company also is developing a new elevator with a revolving turntable that will make possible the parking of cars two deep and it will handle them faster."

For the last several years, Parkmaster Systems, Inc., and its predecessors in interest, have been engaged in developing a parking system that fits the description above quoted in that our elevator has a revolving two-car turntable incorporated in the floor of the elevator and two shuttles operating from the elevator, making possible the parking of cars two deep in a rapid manner.

Parkmaster Systems, Inc., is not connected in any way with Pigeon Hole Parking Co.

Could it be possible that your reporter has confused our development with the Pigeon Hole Parking Co. device?

Parkmaster Systems, Inc., is now engaged in the production of the parking system referred to above.

WILLIAM J. PORTER
President
Parkmaster Systems, Inc.
Spokane, Wash.

[EDITOR'S NOTE—Our reporter was confused. The system referred to in the article is indeed that developed by Parkmaster Systems, Inc.]

For further comparison

SIR: My attention has been called to an article in ENR Oct. 8, p. 178—"Aldrich water purification unit costs compared with conventional filter plants." I give you the following data relative to a few recent "conventional filter plants" designed and built under our direction because the unit costs are very much less than the costs quoted in your Conventional Filter Plant Cost table. Incidentally, the lowest cost in that table, namely, Cedar Rapids, Iowa, is also one of our designs.

At Gary, Ind., there is now being completed a 36-mgd filter plant, the coagulation basin capacity of which is for 48-mgd. The actual cost is $56,000 per mgd capacity.

At Indianapolis, a 36-mgd filter plant was built under bids received in August 1949 and 1951 at a total cost

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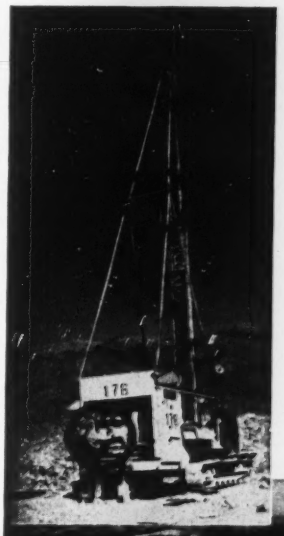

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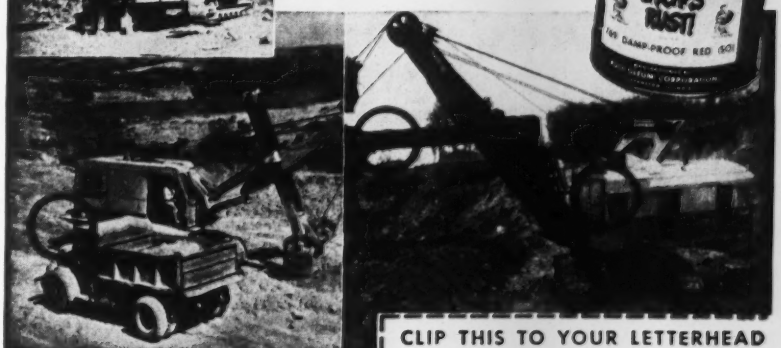

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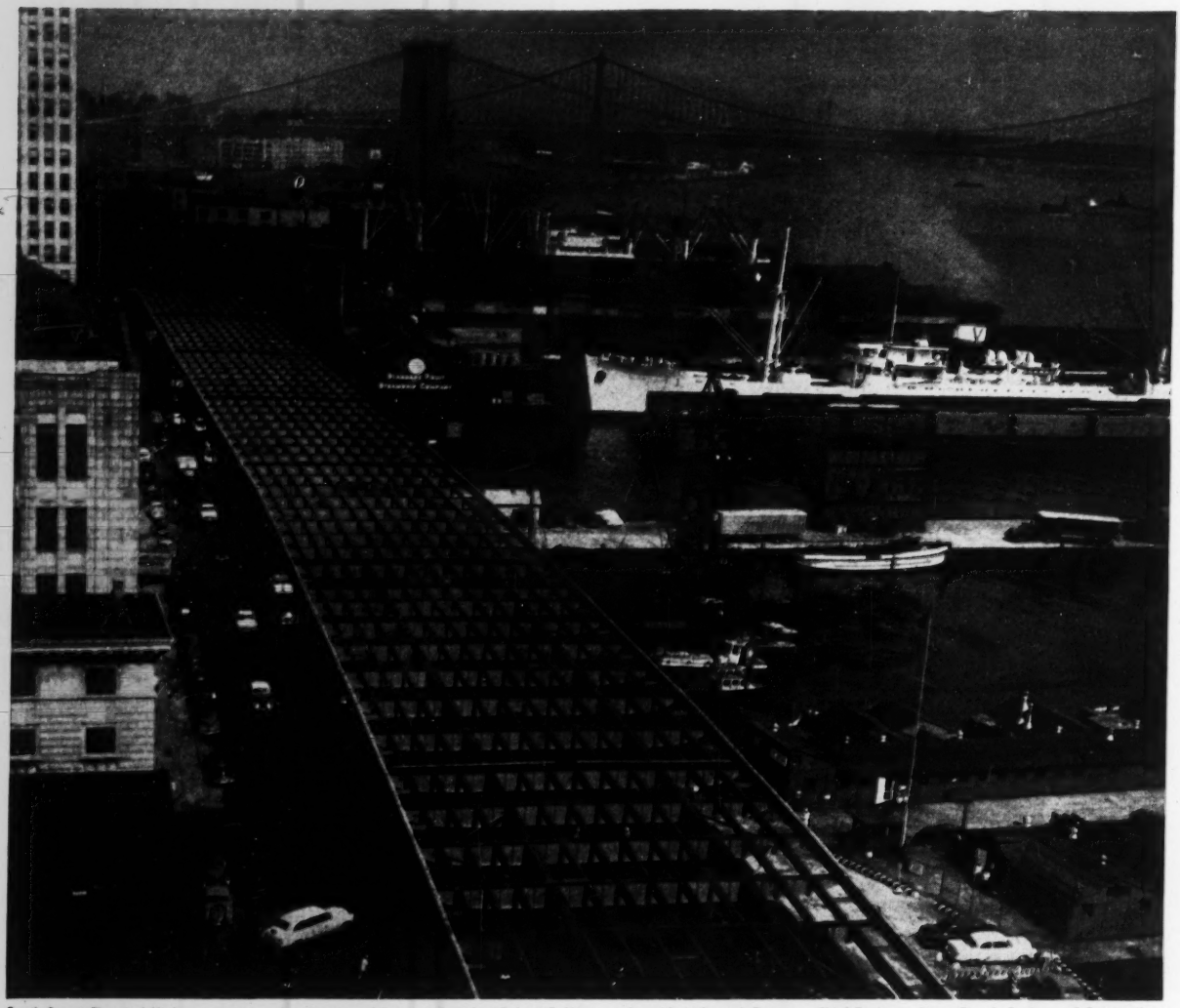

South Street Elevated Highway project under direction of Borough President Robert F. Wagner, Jr., with Anthony J. Donargo, Chief Engineer; Pincus Rizack, Engineer of Construction; John T. Carroll, Resident Engineer for the Borough. Design by engineers of office of Borough President under supervision of Joseph C. Collyer, Engineer of Design, and Jacob M. Friedland, Engineer of Structures. General contractor: Fehlhaber Corporation; A. Burros, General Superintendent.

New Elevated Highway Along New York's East River

The 1.61-mile-long South Street Elevated Highway along the East River waterfront will greatly relieve traffic congestion in the Fulton Fish Market section of New York City. It will separate through traffic from waterfront commercial haulage, and connect the Franklin D. Roosevelt Drive with the Battery Park Underpass.

In constructing the 90-span superstructure of the elevated highway, Bethlehem fabricated and erected 15,582 tons of steel.

With the completion and opening to traffic of the South Street Elevated Highway, the island of Manhattan will be completely encircled by an express dual highway, except for a two-mile stretch along the Harlem river.

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BETHLEHEM STEEL

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of approximately $2,225,000, equivalent to approximately $62,500 per mgd capacity.

At Dayton, Ohio, a 96-mgd filter plant was put under contract in the spring of 1951. The total cost of that plant is $4,140,026 or the equivalent of $43,100 per mgd capacity.

Contracts were awarded on a 48-mgd softening and filtration plant for Des Moines, Iowa, in January of 1948. This plant cost $1,946,177, the equivalent of $40,600 per mgd capacity.

Conventional filter plant costs vary with the consideration given to economics in the design, as can be illustrated by the Milwaukee 200-mgd plant built on made land in Lake Michigan at a cost of $27,500 per mgd as compared to the Chicago South District plant started at about the same time but with the construction dragging over several years costing approximately $75,000 per mgd capacity. And Denver, where the topography made the most economical layout practicable, the Moffat filter plant, built about 1938, cost but $18,000 per mgd.

All of these plants have what we consider the latest equipment and embody the latest developments in the art of water treatment. Interiors in general are of terra-cotta and exteriors either of stone or face brick of pleasing architectural design.

Among other factors affecting cost is careful consideration to the programming of construction and arranging of the work for letting to contractors according to a program which will enable them to bid on those parts of the work on which they are particularly competent and subdivided as to permit their bidding on individual contracts or on a number of contracts, thus securing the advantage of competition from both the large and the smaller contractors.

Louis R. Howson
Alvord, Burdick & Howson
Chicago, Ill.

CALENDAR

Structural Clay Products Institute, The Greenbrier, White Sulphur Springs, W. Va., Nov. 7-11.

American Association of State Highway Officials, annual meeting, Wm. Penn Hotel, Pittsburgh, Pa., Nov. 10-13.

Conference on porcelain enamel in the building industry, National Academy of Sciences, Washington, D. C., Nov. 12-13.

Fall meeting, Tennessee Valley section, ASCE, Whittle Springs Hotel, Knoxville, Tenn., Nov. 13-14.

Highway and Surveying conference, University of Florida, Gainesville, Nov. 19-20.

American Institute of Steel Construction, annual convention, Boca Raton Hotel, Boca Raton, Fla., Nov. 30-Dec. 4.

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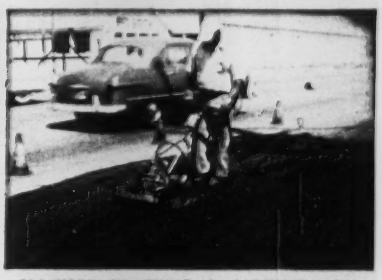
MACADAM CONSTRUCTION

In one pass the Jackson Multiple Compactor will compact 12" of rock to support smooth rollers. In 4 passes compaction to final density may be obtained. With 2 passes all voids from top to bottom can be filled with fines. In gravel sub-bases 7" thick, one pass suffices to produce densities exceeding 100% Standard Proctor. Working speeds from 0 to 60 ft. per minute. 5½ MPH travel speed.

SOIL COMPACTION. The powerful, new, self-propelling Jackson Compactor, with 12" to 26" interchangeable bases, achieves specified density of granular soils in 8" to 10" depths at 2400 sq. ft. per hour. Perfect for bridge and pipeline fills, concrete floor sub-bases, etc.



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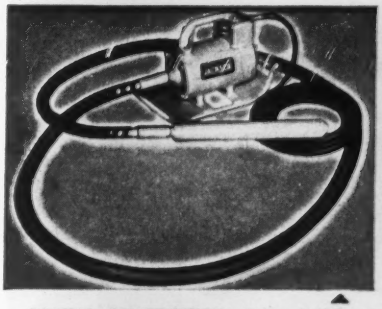

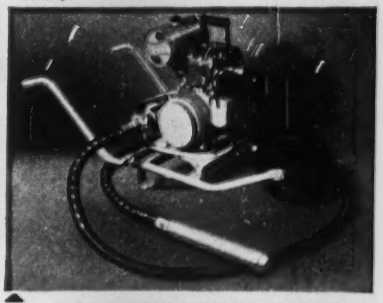

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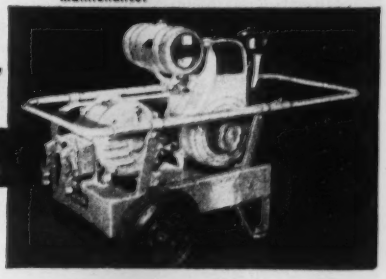

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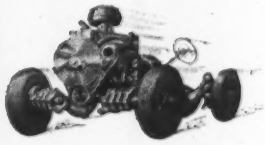
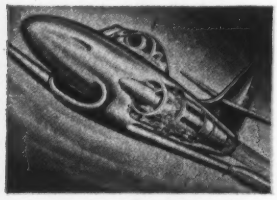


"Sinews" to give cars "go"

For vital automotive parts—precision-machined components that can "take it," year after year, leading *automobile manufacturers like* FORD, *have long looked to Lycoming.*



"Blasts" for jets

To precision-produce tough, unfailing major components that put the "blast" in its superb J-47 jet engine—GENERAL ELECTRIC *looks to Lycoming.*

How a helicopter hangs by its "elbows"

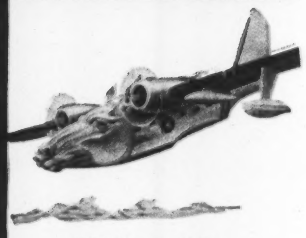
For flexible "elbows"—rotor assemblies that control the amazing maneuvers of its H-21 "Work-Horse" Helicopter—PIASECKI *looks to Lycoming* for precision production.

New "ticker" for tanks

For a dependable tank "heart"—500 horsepower's worth of rugged, air-cooled engine—U. S. ARMY ORDNANCE *looks to Lycoming*, pioneer in the air-cooled engine field.

How a jet engine runs on its "nerves"

To produce the auxiliary "nerve center" for its J-40 jet engine—a complex gearbox that transmits power to vital accessories—WESTINGHOUSE *looks to Lycoming.*



"Air horses" for lifesaving over the sea

To help swell the production of the mighty Wright-Cyclone engine—dependable "horses" for air-sea rescue work—CURTISS-WRIGHT *and the* U. S. AIR FORCE *look to Lycoming.*

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AIR-COOLED ENGINES FOR AIRCRAFT AND INDUSTRIAL USES • PRECISION-AND-VOLUME MACHINE PARTS • GRAY-IRON CASTINGS • STEEL-PLATE FABRICATION

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THE CONSTRUCTION WEEK

- **Fish vs. power**—Attorneys for the Washington State Fisheries and Game Departments were delving into their law books again to see if they could appeal a Circuit Court decision that has given the nod to power rather than to fish in the Cowlitz River.

  Involved is a battle between the two departments and a $145-million hydro project being pushed by the city of Tacoma. The project—approved by the Federal Power Commission several years ago (with the proviso that young fish must be gotten downstream)—would produce an eventual 460,000 kw of power at two dams, one 325 ft and one 185 ft high. Tacoma officials protested that they had devised a feasible plan to get fish past the barrier—Fish and Game people have disputed the point hotly, claiming that the project would wreak serious damage to the state's fishing industry.

  But the court's opinion was that it had no jurisdiction in what it saw as essentially a problem of policy on a navigable stream—a problem the court placed squarely up to Congress and the Executive Branch of the federal government.

- **1954 Forecast—Generally good**—Manufacturing industries now plan to spend only 8% less for new plant and equipment than they will have spent in 1953. That's the conclusion of a special check-up survey by McGraw-Hill's Economics department.

  Right now, the survey indicates that manufacturers plan to spend $11.7 billion in 1954, compared with $12.7 billion this year. Biggest increases in capital spending are in automobiles, electrical and industrial machinery groups. Cutbacks can be looked for in the steel and chemical fields.

- **Wage pattern straw**—If you're looking for indications of labor's thinking on wages for the coming year, you should take into consideration the statements of David J. McDonald, United Steelworkers president.

  Said McDonald: "There's no timetable set on the steel union's much-discussed drive for a guaranteed annual wage. Observers think it means that there won't be any abnormal push on wages until 1955, when the present contract with General Motors—a pattern for many other big-industry wage contracts—expires."

- **Even break**—A Canadian engineering firm should be employed to draw up traffic plans for Toronto's proposed Lakeshore Expressway—but that firm must employ a top U. S. consulting firm.

  With that recommendation, Toronto's metropolitan co-ordinating committee neatly side-stepped a possibly explosive fight over who should do the job. In fact, the row already had started—when a news leak disclosed that one of the committee's technical groups had recommended flatly that a U. S. firm be employed to do the preliminary layout. Canadian engineering groups immediately denounced this recommendation as a slight to native professionals.

"The Job Goes TWICE AS FAST with 'Incor'"

GRAVESEND HOUSES, Brooklyn, N. Y.

Owner: **NEW YORK CITY HOUSING AUTHORITY**

General Contractor:
CAYE CONSTRUCTION CO., INC., Brooklyn, N. Y.

Architect: **MATTHEW W. DEL GAUDIO**, New York

Structural Engineers:
TUCK & EIPEL, New York

Ready-mix 'Incor' Concrete:
COLONIAL SAND & STONE CO., INC.; New York

● Assembly-line efficiency in industry has its counterpart in construction, as illustrated in Gravesend Houses, latest in New York City Housing Authority's record-shattering program.

Foundation problems slowed the job—but concreting know-how made up two months' lost time, got the job back on schedule. Walls and slabs above first floor, in the 15 seven-story units, were concreted with 'Incor' 24-Hour Cement.

Well-built forms were filled, stripped, reassembled, on schedules as precise as any automobile assembly line: 105 floors concreted in 66 working days—1.6 floors a day! Contractor's sum-up:

'Incor' was a life-saver . . . the job went twice as fast, thanks to high early strength you can rely on . . . exceptionally smooth surfaces saved on finishing, too.

Point to remember: Today's concreting methods, with an assist from 'Incor',* make available the inherent fire-safety of concrete-frame construction, at faster erection speeds—and lower costs.

*Reg. U. S. Pat. Off.

LONE STAR CEMENTS COVER
THE ENTIRE CONSTRUCTION FIELD

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 129,000,000 SACKS ANNUAL CAPACITY

Unions of professional employees are agitating to restore the earnings differential between professional and production workers which they say has narrowed because of militant bargaining by the shop unions. Engineers also want to widen the differential between starting and experienced engineers. They argue it has narrowed because of higher starting salaries commanded by beginners during the shortage of such engineers.

The Engineers and Scientists of America, an association of professional unions, contends in material submitted to the Labor Department that a man with 30 years of experience today is earning only twice his starting salary; whereas, 20 years ago a 30-year man was earning four times what he got at the start.

•

Average union wage scales in construction trades are still going up—but the rate is slowing down. Labor Department's BLS report for first three quarters of 1953 shows advance of 4%, compared with a 6% rise during same period in 1952.

Estimated average wage scale of union construction trades workers was $2.71 an hour Oct. 1, 1953—that's ten cents above the Jan. 1 level, and a third higher than the 1947-49 average.

•

The carpenters and machinists are trying to settle their long-time jurisdictional fight over which union should install machinery in new construction. They've hired Rev. William J. Kelley and John Dunlop, labor experts, to work out an agreement.

•

Reclamation officials fear more friction with Budget Bureau as a result of a report of survey team studying reorganization of Reclamation. One section of the report (see page 21) said flatly that the Bureau of the Budget—which decides for the President how much funds an agency can ask from Congress—"at present lacks confidence in Reclamation's engineering competence."

The survey team suggested an end-run around Budget Bureau, a hard thing to do. The report said that Congress originally set Reclamation's objectives and hence Congress—not the Budget Bureau—should make the final determination on whether a project should be started.

•

McKay's top command hopes Reclamation spending will go higher beginning late in calendar 1955. Present rate of $150 million per year is about half what the Democrats spent during their peak reclamation year. Interior officials figure that by 1955 the battle to balance the federal budget will be over, and they can get more funds for their programs.

•

Flood control and rivers and harbors projects up for authorization beginning in January are being re-screened this week by Public Works Committee of the House and Budget Bureau officials. There are about 100 projects involved, most of which had been okayed by Budget Bureau under Democrats. Now Eisenhower's team is looking the projects over. Total involved is in the neighborhood of $900 million. Expectation is that it will take at least a month to do the screening job.

•

Tax amortization for New England steel mill has been okayed by Office of Defense Mobilization. Estimated cost of the mill, to include two electric furnaces and a rolling mill, would be $26.4 million. ODM allowed 65% write-off on $20.5 million of the investment.

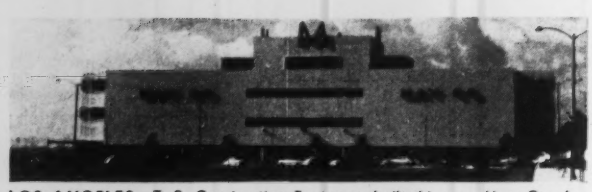
Coast to coast...Ryerson re-bars

Meet Construction Schedules

From Boston to Los Angeles, leading contractors depend on Ryerson for on-time deliveries of fabricated reinforcing steel and related products.

A few recent projects on which Ryerson supplied the steel are shown here. Their size, variety and widespread sites point up the fact that Ryerson can handle any type of job in almost any location. Re-bars are accurately cut and bent. Metal tags that won't blur or tear make identification easy. And to simplify purchasing *all* steel requirements can be ordered from one source.

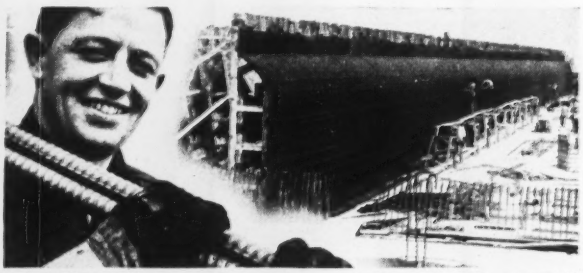
On your next job contact Ryerson for a lump sum or average pound price.



LOS ANGELES—T. S. Construction Engineers built this new May Co. department store—with the help of on-time deliveries of re-bars from Ryerson.

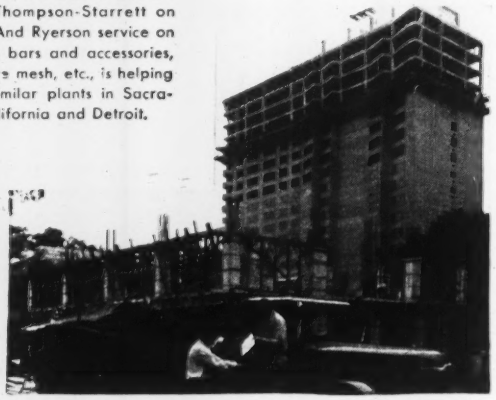
BOSTON—Gust K. Newberg Construction Co. was contractor for this new 1000-bed veterans hospital at Brockton, Mass. Ryerson supplied 4,000 tons of reinforcing steel for the project.

MILWAUKEE—In building the Milwaukee County Stadium (home of the Braves) Hunsinger Construction Co. played safe—ordered fabricated re-bars from Ryerson.



BROOKLYN—Thompson-Starrett Co. was contractor for the vast Owl's Head sewage treatment plant (shown here during construction) which will have a daily capacity of 160 million gallons. Ryerson supplied the reinforcing steel—4,000 tons of it delivered to Thompson-Starrett on schedule. And Ryerson service on reinforcing bars and accessories, spirals, wire mesh, etc., is helping to build similar plants in Sacramento, California and Detroit.

BUFFALO—Bates and Rogers Construction Co. depended on Ryerson for the reinforcing steel needed to carry a new elevated highway over waterways and industrial congestion. More than 2,000 tons of fabricated re-bars were delivered when needed.



CHICAGO—Neighboring multi-story apartments rise on Chicago's lake front with the help of dependable Ryerson steel deliveries. For the building in foreground contractors were: Crane Construction Co. and Carl E. Erickson Co. For building in background: Sumner S. Sollitt Construction Co.

PRINCIPAL PRODUCTS: REINFORCING BARS AND ACCESSORIES, SPIRALS, WIRE MESH, STRUCTURALS, PLATES, SHEETS, STAINLESS, ETC.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Reclamation Bureau to shift operational control to field

Reorganization plan makes Denver key point—provides for decentralized contract procedure—curtails manual

A reorganization of the Bureau of Reclamation, which will de-emphasize Washington and vest more responsibility in field echelons, began last week. Immediate goal was to center the bureau's top-level technical work in Denver, where the major engineering functions already are located.

Main points of the reorganization plan:

- Promotion of chief engineer L. N. McClellan to an Assistant Commissioner of Reclamation in charge of the Denver office. Transfer to Denver of the project planning, operation and maintenance, and power utilization functions now in Washington.
- Reduction of the Washington office to staff and liaison functions essential to the office of the commissioner. Two assistant commissioners, one in charge of administration and the other in charge of operations, will remain in the Washington office.
- Retention of the regional office setup, but abolition of district offices in favor of project or consolidated project offices.

This plan of reorganization is based almost entirely on the report submitted late last month by a five-man survey team set up in August to study organization and functions of the bureau. Headed by E. A. Moritz, a former bureau regional director at Boulder City, Colo., the team turned in a critical appraisal of both organization and operations.

• Too much remote control—It concluded the bureau organization has been geared to a construction program considerably larger than it has ever undertaken, and recommended a re-orientation to conform with the actual work load. The bureau's organizational chart, according to the survey report, appeared to be designed for an annual construction program of $500 million, whereas the peak program was only $300 million a year. Construction this year is around $150 million, and about the same is anticipated for the next year or two.

After a close look at field operations, the survey team concluded: ". . . There seems to be nothing much wrong with field operations which cannot be corrected by changed procedures at higher echelons."

The report hit hard at the reviews, audits and inspections imposed by the Washington office, and said many of these were repetitious and unnecessary, indicating a lack of faith in bureau personnel.

• Regional contract awards—Of prime interest to contractors is the survey report proposal to lodge full construction contract authority in the regional directors. Up to now, regional offices have taken bids and made awards only on small jobs. Under the new proposal, the regional director would handle all phases of contract administration, including bid invitations and awards. The assistant commissioner-chief engineer's Denver staff would furnish only consulting, advisory and inspection services on construction contracts. Project construction engineers would be appointed by the regional directors, with the approval of the assistant commissioner in Denver.

Such a change would reduce the work load in Denver, the survey team points out. It should permit a cut in the number of engineers in this office, thus answering a common criticism that Denver is overstaffed—a complaint that had some justification, in the committee's opinion.

Reorganization schedule

Reorganization is to be carried out in three phases spaced over a three-month period. During the first month, the main changes in the Washington office and transfers to Denver would be effected. Additions to the manual would be stopped.

Second phase involves reorganization at regional level, abolition of the district offices, and shift of functions needed to accomplish the reorganization.

Third phase would be a restudy of the work loads of the central regional and project offices with a view to actual personnel needs.

Wide World photo

L. N. McClellan will head Denver office as an Assistant Reclamation Commissioner.

• Manual to be cut—Although the team recommended some reshuffling of regional office boundaries, the Interior Department decided that boundaries are to remain as they are at the present time. It was also decided that the California office at Sacramento is to be re-instated as a regional office. Earlier this year the Sacramento operation had been reduced to a project office.

It was generally assumed that the demotion of the California office was designed to permit replacement of Director Richard Bok, whose missionary ventures on behalf of the bureau had drawn widespread criticism. Assistant Interior Secretary Fred G. Aandahl conceded last week that the rapidly changing status of the office was due to "philosophical" differences.

Hardest hit by the report was the Bureau of Reclamation Manual, a work now numbering several volumes setting forth operating procedures, engineering criteria and the like. The survey team was unanimous in recommending that all additions to the manual be suspended and that it be drastically cut down to a more usable size.

• McClellan hails move—Commenting on the change from his office in Denver, McClellan declared: "The reorganization of the bureau is in the best interests of the future of reclamation in the West. The common interest of all of us in Reclamation is to further western development and to clarify our organization. It clears the way

for us to devote full attention to this goal."

"Naturally, I am pleased with the high recognition accorded our engineering staff," he added. "Centralization of engineering activities will facilitate operations greatly and promote efficiency and economy."

Reclamation Commissioner W. A. Dexheimer doubts that bureau personnel will be cut much below the present level of 10,909 employees, although the survey team believes further trimming is possible. Within the last six months, 2,175 persons have been dropped from the bureau payroll.

Changes suggested by the survey team would cut the bureau's Washington staff in half, reducing it from 320 to 161. The proposed reorganization would shift 35 present Washington positions to Denver and would make 124 "surplus," subject to prompt elimination.

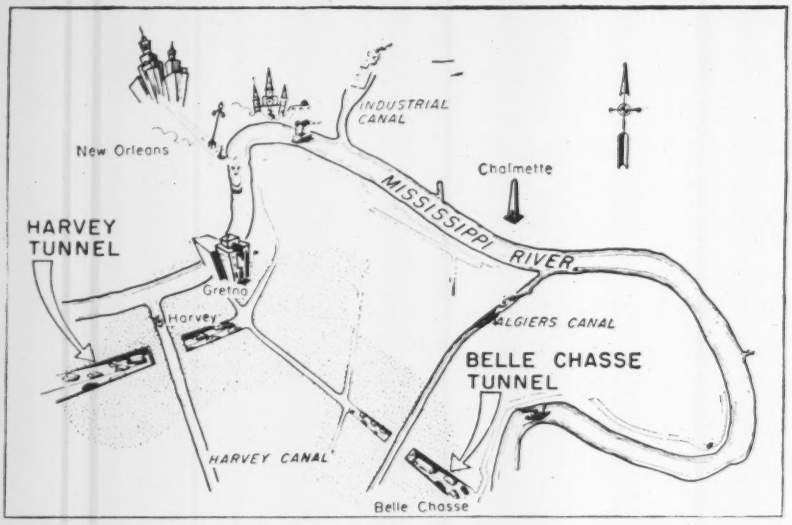
Actual reshuffling will hardly be this drastic, in the opinion of Commissioner Dexheimer. Some of the jobs marked for elimination will prove more essential to effective operation than the survey team indicated, Dexheimer believes. And the Washington office cannot come up with the answers demanded by Congress, the Budget Bureau and the Interior Secretary without an adequate staff.

Abolition of the district offices may change some titles, but will not bring any noticeable changes in the bureau setup. These offices are now located at focal points of bureau projects and it is generally assumed they will simply be reduced to project offices.

A sizable section of the Moritz report dealt with "external factors influencing the Bureau of Reclamation mission." The Interior Department, in announcing the reorganization plan, said it had no comment on this portion of the report which dealt at some length with touchy issues.

Among other things, the survey team recommended that all requests of congressmen, local interests, and interested persons be funneled through the office of the commissioner. It indicated that use of "pressure" from outside sources had forced out unjustified project planning reports.

In essence, the survey team's report aims to speed up and simplify bureau operations in processing projects from preliminary investigations to final repayment. This objective is to be gained in large part by streamlining the organization to eliminate bottlenecks, bypasses and multilateral division of authority and of work. As a corollary, the streamlining calls for cutting the organization down to a minimum number of responsible employees in upper echelons.



LOUISIANA TUNNELS—Harvey and Belle Chasse tunnel sites are in growing industrial area southward across the Mississippi from New Orleans. Each underpasses a canal.

Three Gulf Coast tunnel jobs coming up

New Orleans canal underpass projects ready for bids; design work starts on Corpus Christi harbor crossing

Three vehicular tunnels in the Gulf Coast region are approaching the construction stage.

The first will underpass an existing canal near the Mississippi's right bank, opposite New Orleans. Called Harvey Tunnel, it will be advertised for bids Nov. 15, according to Palmer and Baker, Inc., Mobile engineering firm that holds design contracts for all three tunnels.

The second, for which plans and specifications have been completed, will go under the location of a new canal in the same vicinity (see map), while the third will carry four lanes of traffic under a ship channel at Corpus Christi, Tex. Design work for this one has just begun.

Harvey Tunnel will conduct four lanes of traffic under Harvey Canal, part of the Intracoastal Waterway. To cost $5.5 million, it will be 1,080 ft between portals and 1,894 ft from grade point to grade point. The enclosed portion will be a single concrete box section with two 22-ft roadways separated by a wall. Headroom will be 14 ft; top of concrete will be 18 ft below mean gulf level at the lowest point. There will be a walkway for pedestrians. The contractor will have the option of floating a 15,000-ton center section to the site and sinking it to position, or building the structure in the dry by cofferdamming across the canal in two steps and closing off half of the canal at a time.

Cost estimate for the New Orleans area's second underwater route, Belle Chasse Tunnel, is $2.8 million. The lower amount is partly on account of the fact that there will be two lanes, and partly because of construction conditions. The new canal, nine-mi Algiers Cutoff between the river and Harvey Canal, now is being dredged. It is planned to build the tunnel in open cut before dredging reaches the site, then flood the excavation and complete dredging. Overall length of Belle Chasse Tunnel will be 1,933 ft; the enlosed length, 800 ft. Headroom and channel clearances are the same as for Harvey Tunnel, and there will be a walkway in addition to the 22-ft roadway. The Louisiana State Highway Department is handling both tunnels, which will be operated on a toll-free basis.

Much larger than the two Louisiana projects is the proposed Corpus Christi tunnel, 450 air miles southwest of New Orleans. Estimated at $11.5 million, it is to be financed by bonds supported by tunnel tolls. Owner is the city of Corpus Christi.

Overall length is expected to be 3,665 ft. One benefit of the project would be widening of Corpus Christi harbor entrance from 90 ft to 300 ft. A bascule bridge adjacent to the tunnel location now crosses the entrance, carrying 20,000 vehicles daily as well as tracks of the Southern Pacific Ry. The rail crossing would be relocated 5 mi up-channel from the bridge, which would be removed.

Stress evacuation in civil defense planning, municipal officials told

American Public Works Association explores variety of municipal problems at convention and equipment show

Civil defense problems got top billing at the 59th annual meeting of the American Public Works Assn. in New Orleans last week. City officials were urged to concentrate on evacuation plans as the best alternative to cost-prohibitive downtown shelter construction.

Technical sessions during the four-day congress and equipment show were devoted to symposiums and round table discussions on a wide variety of problems facing public works officials today and in the future. While a total of 59 experts in their fields discussed public works problems, 51 manufacturers provided one of the largest equipment shows in the records of the association.

• **Civil defense**—What municipalities must do in the event of an atomic attack was pointed out in detail by Val Peterson, Federal Civil Defense Administrator.

"In the event of such an attack," said Peterson, "the best and most dependable method of evacuating cities would be for the people to march out of town on foot. Automobiles offer no dependable means of evacuation because of the certainty of traffic jams."

"We recognize the fact that many cities might have only a short warning," said Peterson, "but others might have two hours or more warning. And people could walk quite a distance in that time, especially when under the compulsion of an impending attack."

The alternative for protecting the population of cities subject to an atomic attack, according to Peterson, would be to build heavily reinforced concrete buildings deep beneath the ground. But the cost of that type of protection would be prohibitive.

• **European shelters**—Peterson told of atomic shelters being constructed in Norway and Sweden, under 40 ft. or more of solid granite. One such structure would accommodate 20,000 persons. Located in the central part of the city for quick accessibility, this and other such shelters are to be used as parking garages in peacetime. They are elaborately equipped with electric lighting, air conditioning, gas-filtering devices, and dehumidifying equipment.

Commenting on construction of underground factories, Peterson claimed that it cost very little more to provide 1-cu-ft of underground manufacturing space than 1-cu-ft above ground. First costs of underground construction are higher but maintenance costs are lower, he declared. Sweden has found that when the cost of some of its underground factory construction is figures cheaper than similar factories built above ground.

Peterson urged city planners and other municipal officials to begin making preparations for mass evacuations and a balanced system of protection for essential workers. "We must realize," he said, "that civil defense will be a necessity as long as we live under the threat of an atomic attack, but it is designed to minimize the effects of such an attack. He pointed out that the agency is responsibile for providing relief following all natural disasters except drought. Peterson said, civil defense funds have been used to combat the effects of nine major disasters since March.

• **Composting symposium**—The much-discussed subject of "composting as a method of garbage disposal" (see also report of recent ASCE convention, ENR Oct. 29, p. 21) was tackled by a panel of three experts at the opening technical session, with Carl Schneider, consulting engineer, New Orleans, as moderator.

Interest in this age-old method of waste disposal is on the increase in the United States, declared John R. Snell, Director, Department of Civil Engineering, Michigan State College.

"Until six months ago," said Snell, "about 40% of the municipal garbage in the United States had been fed raw to hogs. At that time, a serious hog disease, similar to foot and mouth disease of cattle, caused by vesicular exanthema, spread rapidly through most of the country. Only quick action of several of the state governments forbidding the feeding of raw garbage to hogs has brought the disease under control."

MILTON OFFNER becomes new APWA president.

Somewhat different views on composting were expressed by M. S. Anderson, senior chemist, Division of Fertilizer and Agricultural Lime, U. S. Department of Agriculture. He expressed the opinion that research relative to production and use of garbage composts is needed before anyone can proceed very far with predictions regarding its economic future.

"Good quality garbage is necessary for making good quality compost," declared Anderson, "and when good quality garbage has been collected and brought to a central point it is usually eligible for transportation to the country for conversion into hog food. The fertilizer industry cannot often compete with the pig."

• **Personal problems**—Many cities are faced with the problem of recruiting and training competent technical employees, and they are competing with high salaries paid by industry. This was the consensus of one round table conference which heard Robert G. Sarvis, Public Works Director, Cincin-

Goals for improving public works

The American Public Works Assn. adopted these resolutions at its annual meeting:

• Contracts—Except when such practice is clearly contrary to the best interests of the municipality, construction contracts should be so written as to require the contractor to furnish the equipment and materials to be used on the project. (Otherwise, it was contended, an unfair burden is placed on the contractor and higher construction costs result.)

• Responsibility—The responsibility for all design, supervision and inspection functions involved in construction should be placed under a single municipal authority.

• Salaries—Pay for municipal employees should be commensurate with salaries paid by private industry for similar work to insure competent personnel to administer public work programs.

nati, warn that "city officials must take the initiative in presenting in-service training courses to their employees." The average worker, he said, will not look for, nor will he follow through with an educational program unless it is furnished him without charge.

Important factors in good employee relations, according to E. B. Shultz, chief of TVA's personnel relations branch include: giving employees voice in making the rules under which they work; enabling them to share responsibility for administering the rules; encouraging them to suggest improvements and rewarding their interest.

• **Highway needs**—The closing technical session heard a warning that "we are inviting traffic strangulation unless our entire highway network is modernized within a reasonable period." This warning was voiced by Norman Hebden, formerly project director of the Highway Research Board's cooperative research project on intergovernmental relationship in highway affairs.

"Since the planning, construction and maintenance of roads is a responsibility shared by states, counties and cities," Said Hebden, "the problem of developing cooperative working arrangements must be solved." The five major areas where cooperative action is needed are: highway classification, uniform standards, planning and programming, organization and management, and authority and responsibility, he said.

• **New officers**—Milton Offner, secretary of the Los Angeles Board of Public Works, was named APWA's new president. He succeeds Allen H. Rogers, superintendent of public works, Garden City, N. Y. Albert G. Wyler, city engineer, New Orleans and general chairman of the four-day Public Works Congress, was elected director-at-large, together with Frederick W. Crane, commissioner of public works, Buffalo, N. Y.

Other newly elected officers included: Charles W. Darling, director of public service, Grand Rapids, Mich., treasurer; Kenneth K. King, director of public works, Phoenix, Ariz., western area vice-president, and Edward P. Decher, secretary and purchasing agent, Joint Sewer Commission, Newark, N. J., was re-elected Eastern area vice-president.

Francis J. Magnuson, city engineer in North Mankato, Minn., received the Charles Walter Nichols Award for outstanding service in the field of sanitation. Charles A. Emerson of Havens & Emerson, New York City, was made an honorary member. Awards for 30 years service in public works were presented to 35 members.

Ford simulates plant fire in tests

Results lead company to decide against using pitch vapor seal in roofing five plants under construction

Simulating recent costly auto plant fires, Ford Motor Co. engineers last week conducted tests that led to a decision to eliminate pitch vapor seal between insulation and steel roof deck on five plants now under construction.

They set fire to two test structures at Dearborn, Mich., to evaluate the effect of heat on two types of standard industrial roof construction. Effect on other structural elements also was noted.

J. A. MacAlarney, director of plant engineering, said that while Ford definitely would discard the vapor-seal method, he is not yet certain what roofing material will be substituted. He expressed a hope that manufacturers would produce a fireproof adhesive for roof construction.

The fire test structures were identical in every respect except roofing. Both roofs consisted of steel decking, covered with 1-in.-thick insulation, topped with three plies of tarred felt overlapped so as to give five thicknesses at all points. Each ply was mopped with coal tar pitch. Gravel was embedded in the top coating of pitch.

One of the roofs, in addition, had a vapor seal between the deck and insulating material consisting of two piles of roofing felt mopped to the deck with asphalt pitch. Vapor seal had been used in the roofs of both the GM transmission plants (ENR Aug. 20, p. 28 and Oct. 15, p. 24). And in the Ford tank plant, also at Livonia, Mich., which suffered fire damage last year.

• **Pitch feeds fire**—In the test, the fire in the structure with the vapor seal was fed and spread by streams of flaming asphalt pitch falling from the roof. That observation was the basis for the recommendation that vapor seal be eliminated from the stamping plant at Walton Hills, Ohio; Hummel engine plant in Cleveland, Ohio; and assembly plants at San Jose, Calif., Louisville, Ky., and Mahwah, N. J.

The test buildings, constructed at a cost of $10,000 were 20x40 ft, one-story high. They were rated as "Class A" by insurance carriers.

Intermediate welds were placed along seams of the steel deck in one-half of each test roof to determine whether such welds give additional strength. Also, part of the underside of the roof panel and one supporting steel column in each structure were painted with fire-retardant paint.

Temperature readings were charted by means of thermocouples attached to the underside of the deck, on top of the roof and on various supporting columns. These instruments indicated temperatures on top of the roofs under 100 F, while readings as high as 1,590 F were taken at points on the undersides of the roofs. Temperatures in areas painted with fire-resistant paint were substantially lower.

None of the steel columns, roof beams or purlins buckled as in the case of the GM Livonia plant fire, but metal curtain walls collapsed and tore loose from the supporting columns.

Controlled heat was applied inside the structures by oil burners ejecting No. 2 fuel oil.

New England shoreline expressway is proposed

The governors and highway commissioners of Connecticut, Rhode Island and Massachusetts have agreed to a route that would tie-in their states' existing, under construction and planned superhighway projects to form a 280-mi expressway from the New York state line at Greenwich, Conn. to the tip of Cape Cod.

Eighty-five mi of new highway construction, including a $20-million Narragansett Bay bridge in Rhode Island, would have to be authorized to form the proposed New England South Shore Expressway. How and when the required new construction can be financed are questions to be put to the three state legislatures.

The route would take in Connecticut's recently authorized Fairfield County Thruway, a toll road project that will represent a re-location of Route 1 along the shoreline from Greenwich to West Haven (ENR May 28, p. 27, and April 9, p. 25) and a proposed extension to New London. Connecticut, however, would have to build a superhighway stretch from Waterford, near New London, to the Rhode Island line at Westerly. This would be about a $17-million project.

Rhode Island's participation is more difficult. Aside from the $20-million, high-level suspension bridge across the east passage of Narragansett Bay connecting Newport and Jamestown, it would have to build an estimated $17.5-million highway from Westerly to the Massachusetts line at Fall River.

Massachusetts would have to extend its mid-Cape Cod expressway up from the Cape Cod Canal to Fall River.

Turnpike project

Pennsylvania will build a $250-million extension

The Pennsylvania Turnpike Commission—now seven years ahead of schedule in retiring its bonds—is prepared to launch a new issue in January to finance construction of a $250-million, 125-mi northeast extension of the state's toll road system.

Often termed the "anthracite extension" the new stretch of toll highway will run from the Philadelphia area northward to serve Allentown, Bethlehem, Wilkes-Barre and Scranton. From the latter city it will be routed to the New York State border at a point near Binghamton for eventual link-up with the N. Y. Thruway.

At the Philadelphia end, connection will be made with the 33-mi eastern extension now under construction from King of Prussia to the Delaware River. The link-up will be at a point between Valley Forge and the river. The $65-million eastern extension will be completed before the end of 1954.

Although preliminary studies by state engineers have established the economic feasibility of the northeast extension, final traffic surveys being made in the northeast part of the state will not be completed before the middle of this month.

Route location has been determined for all but two areas.

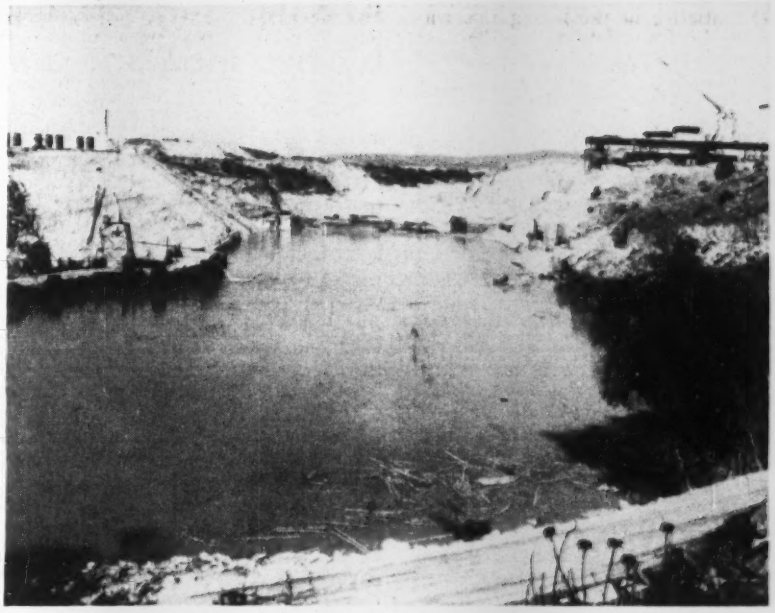
The Pennsylvania Turnpike showed a net profit of $7.6 million for the fiscal year ended May 31. Tolls were paid for 11,304,699 vehicles, producing a total revenue of $21.3 million. This was a 32% increase in gross revenue and a 28% rise in traffic over the previous year.

State engineers also are surveying a proposed extension that eventually would carry traffic from the N. Y. Thruway across the northwestern neck of Pennsylvania to the Ohio border. At Erie, Pa., it would connect with an already authorized extension from that city to the existing turnpike near Pittsburgh (ENR Aug 13, p. 23).

Wisconsin turnpike law is ruled valid

A Wisconsin Supreme Court decision gives the state's new turnpike commission the "green light" to study the feasibility of a toll highway across the southwestern part of the state from Illinois border to Minnesota.

The law creating the commission granted $250,000 for the survey. If the project proves practicable, the commission is empowered to form a corporation to issue bonds and handle construction (ENR June 25, p. 28).



FALSE START—First water over Folsom Dam flows backwards, as a result of flooding caused by downstream cofferdam washout. Powerhouse construction is behind steel sheetpile cellular cofferdam (left), which was not breached.

Folsom Dam takes new setback in stride

Two weeks of pumping have dewatered a flooded working area on the downstream side of Folsom Dam on the American River near Sacramento, Calif., where a cofferdam broke on Oct. 18. It was one of a series of cofferdam washouts that have plagued the job (ENR July 23, p. 39).

Latest break occurred in the downstream cofferdam near the outlet of the dam's 1,570-ft-long diversion tunnel. The washout was attributed to pressure from an increased flow in the river following a 2-in. rainfall and the collapse of a small pond upstream, which had been constructed in the river channel to provide a water supply for use in the dam building operations.

The contractors, Merritt, Chapman & Scott of New York City, and Savin Corp. of Hartford, Conn., reconstructed the 40-ft break in the cofferdam in a day's time. In three days, they had enough water drained from the construction area to resume concrete placement on monoliths that had been as much as 10 ft under water. It then took two weeks to pump out the flooded area, which was under 98 ft of water in some spots.

The upstream cofferdam, which was breached last winter and spring, held fast this time. The power house construction was protected from the flood by an inner cofferdam. The Guy F. Atkinson Co. of South San Francisco is building the power plant.

The setback came as work was moving at a fast pace. In August and September, 144,000 cu yd of concrete was placed, to exceed by 1,000 cu yd the amount placed since concreting began last fall. The dam will require a million cu yd of concrete.

U. S. firms still busy on projects in Colombia

Colombia's Minister of Public Work, Trujillo Gomez, has dissipated the idea of a possible stoppage on the Magdalena Railway project and the national highway system. In spite of recommendations by Colombia's National Congress of Civil Engineers that foreign companies be removed (ENR Sept. 10, p. 24), the U. S. firms now engaged on these two major programs will continue to work.

Gomez declared that the foreign contracting firms, mostly from U. S., were not responsible for the exorbitant expenditure and poor planning decried by the Congress of Civil Engineers. After analyzing the mistakes of his predecessors, the Minister of Public Work blamed them for the grievances brought up by the congress.

The projects, started under the previous administration, may be expanded in the near future, and the position of the U. S. companies, all of which employ Colombian engineers, seems to be secure under their present contracts.

10-mile, 3-in. plastic pipeline laid by two men and a boy in five days

CARTONS OF PIPE are dropped off truck along 2-ft wide, 5 ft 4 in.-deep ditch.

Two men and a boy recently laid in five days 52,300 ft of 3-in. plastic pipeline for transporting oil from four wells on the Ft. Peck Indian Reservation in Montana to loading docks of the Great Northern Railway near Poplar, Mont.

Said to be the longest cross-country crude oil plastic pipeline in the country, it is located 80 mi south of the Canadian border and 60 mi west of the North Dakota line.

Most of the actual installation work was done by Luther Symons of Denver, vice-president of Plastic Service Lines, Inc., which is the owner of the line. C. C. Thomas of Denver, operator of the four wells, contracted with the pipeline to deliver the oil to Poplar at 10 cents per barrel. He had been paying 22½ cents to have it trucked to the railhead.

• **Big labor saving**—Symons said overall costs of the nearly 10-mi pipeline ran a little more than $75,000. A dealer in steel pipe for 10 years, he estimated that a comparable steel line would have cost about $100,000.

The one-fourth saving, he said, was mostly in labor. The plastic pipe-laying crew was composed of Symons, R. W. Greene of Casper, Wyo., and Dick Thomas, 14-year-old son of the oil operator. Symons said it would have taken at least five men to lay steel pipe. In addition, heavy equipment like welding machines and boom-equipped trucks for handling the pipe would have been needed.

The light weight and easy handling of the plastic pipeline was a big cost-saving feature, Symons said. The 3-in. plastic pipe, ¼-in. thick, weighed .65 lb. per ft. The 20-ft lengths used in the line weighed 13 lb. each.

As an example of the ease of handling, Symons said he loaded onto a truck 5,400 ft of plastic pipe in 15 min. The pipe was shipped by the manufacturer, Johnson Plastic Corp., Chagrin Falls, Ohio, in cartons containing six lengths—a total of 120 ft.

The pipe was extruded by the Johnson corporation from Tenite II, a product of the Tennessee Eastman Products Co., a division of Eastman Kodak Co. It is a cellulose acetate butyrate compound.

The plastic pipe is joined with a plastic coupling. It is attached by using a thinner and a cement. The thinner breaks up the plastic surface so that the pipe and coupling will adhere to the cement.

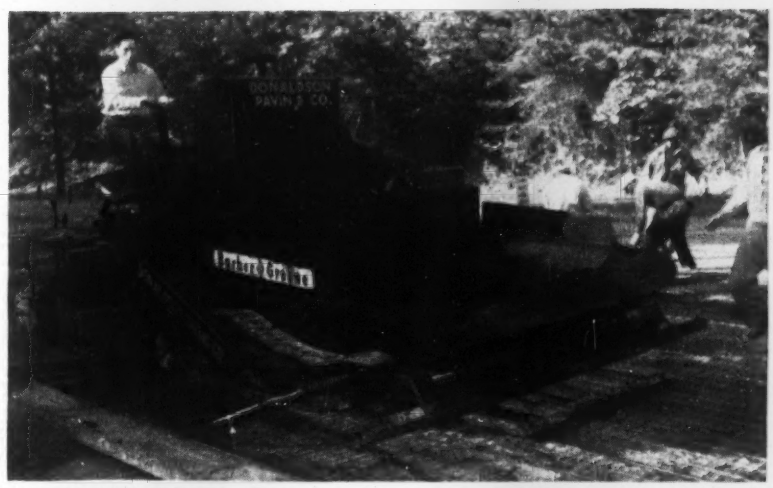
BOY HELPER totes 20-ft length of plastic pipe weighing only 13 lb.

JOINING is by means of a plastic coupling secured by solvent cement.

• **Steel conduit problem**—The line was laid in a ditch 5 ft 4 in. deep and 2 ft wide to permit snaking the pipe. Symons said that no road which the pipeline crosses was closed for more than 30 min. while the ditch was dug and the pipe laid.

The biggest problem was placing the pipeline under the Great Northern Railway's tracks and U. S. Highway No. 2, where state law requires use of steel conduits.

Symons used 5½-in. outside dia. oil field steel casing for the conduit, but his big problem was sealing the ends of the conduit around the plastic pipe, which melts under temperatures of 140F. This prevented welding or any other seal requiring high temperatures. Symons cut rings off a plastic pipe length and split the rings and cemented them around the plastic pipeline to build up the outside circumference. Steel ears were welded on the steel casing and flanges were made to come against calking compound which had been tamped against the plastic rings. The flanges and ears were then bolted.



IMPROVISED SLEDS made from sections of 12-in. curb forms were secured to the front end of the paver to keep the wire mesh flat as the paver moved ahead.

Wire mesh bituminous pavement tested

The District of Columbia Highway Department is experimenting with wire mesh as a means of preventing rippling in bituminous pavements where vehicles decelerate, also to keep cracks from opening over cracks in the underlying concrete base.

About 3,000 sq yd of such reinforced pavement were put down recently on 16th St., N.W., near Alaska Ave. in Washington. Alternate sections were laid with and without wire mesh for purposes of comparison. The fabric used was made of No. 10-gage cold-drawn steel wire welded into sheets 11½ x 7 ft. In this mesh, longitudinal wires are spaced at 6 in. and transverse wires at 3 in.

Fabric sheets were laid directly on the existing concrete pavement after cracks and irregularities had been repaired. Sheets were overlapped 6 in. transversely and tied with wire at intervals to reduce curling and slipping as trucks and the paver moved ahead.

A binder course of 1¼ in of bituminous concrete was put down first, followed by a 1-in finishing course.

The paver had to be adapted to put down a 12-ft width. Also, it was necessary to attach heavy sleds to the underside of the paver, extending forward from near the screw conveyor, to keep the mesh from fouling the paver as it moved ahead. Also, the fabric was overlapped shingle fashion as a further precaution.

The District of Columbia experiment is one of a new series of tests of reinforced bituminous surfacing. The first application of this type of reinforcing for a bituminous surface, according to the Wire Reinforcing Institute, was made in 1946 in Liberty County, Texas. A further test installation is being made there this year as results from the earlier tests were inconclusive.

Construction industry leaders honored by Michigan's College of Engineering

A number of civil engineers and construction industry leaders were among the distinguished alumni to be honored by the University of Michigan College of Engineering at its recent centennial celebration.

Lou R. Crandall, president of George A. Fuller Co., and Robert Moses, Commissioner of Parks for New York City, received honorary degrees. Those who received citations included the following:

• **From Detroit**—John W. Armstrong, executive vice-president, Darin and Armstrong, Inc., general contractors; Max W. Benjamin, vice-president in charge of engineering, Boddy Benjamin Associates, Inc.; Frederick A. Boddy, president, Boddy Benjamin Associates, Inc.; Walter L. Couse, president, Walter L. Couse and Co.; George E. Hubbell, santiary engineering consultant, Hubbell, Roth and Clark; Ang-Tsung Lieu, engineer in charge of the foundation division, Giffels and Vallet.

Walter C. Russell, president of Peerless Cement Co., past president of Portland Cement Assn., also one of the first to organize an incentive plan for labor in a major industry; Henry R. Schemm, vice-president of Huron Portland Cement Co., responsible for improved manufacturing methods used in the cement industry; Harry A. Shuptrine, bridge engineer, Wayne County Road Commission; William W. Williams, operations manager for Detroit Edison Co., responsible for new construction methods of overhead and underground power transmission.

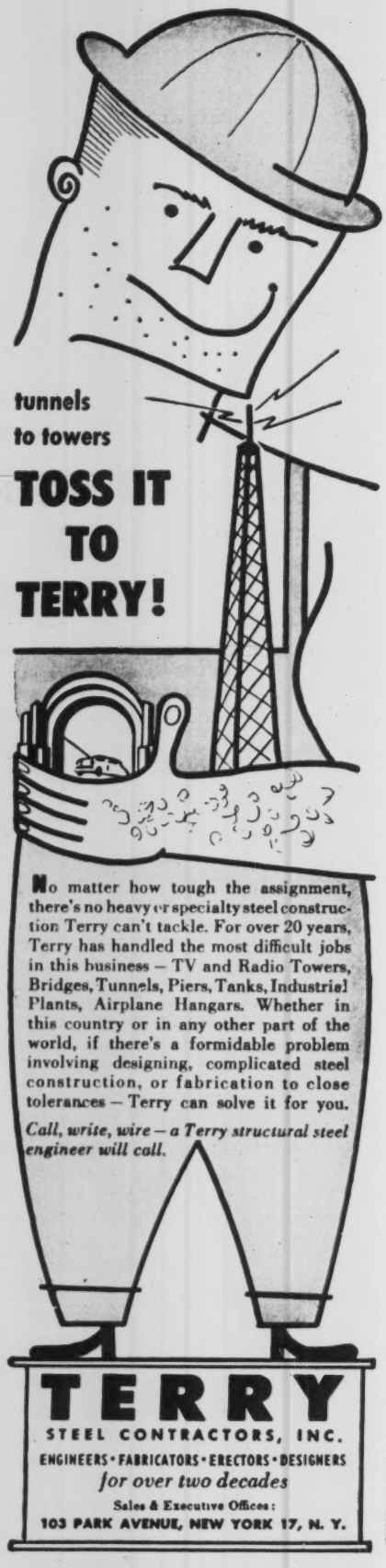
• **From other cities**—Clifford E. Paine, Fennville, Mich., consulting engineer; Ralph G. Dunn, president, Strom Construction Co., general contractors, Grand Rapids, Mich.; Cameron L. Davis, president, Miller-Davis Co., engineers and builders, Kalamazoo, Mich.; Louis C. Kingscott, president, Louis C. Kingscott and Associates, Kalamazoo.

George M. Foster, chief deputy commissioner of the Michigan State Highway Department; Charles M. Ziegler, Michigan State Highway Commissioner, and president of the American Assn. of State Highway Officials; Fred H. Tracy, steel construction engineer, Los Angeles; Felix Kahn of MacDonald and Kahn Co., San Francisco, one of the firms responsible for construction of Hoover and Grand Coulee Dams.

Dana Young, professor of civil engineering and chairman of the department, Yale University; David G. Mickle, traffic engineer, Automotive Safety Foundation, Washington, D. C.; George D. Kennedy, consulting engineer and assistant to the president, Portland Cement Assn., Chicago; Clarence W. Klassen, chief engineer, Division of Sanitary Engineering, Illinois State Department of Public Health, Springfield.

Raymond C. Daley, vice-president, George A. Fuller Construction Co., New York, in charge of construction on the Ohio Valley atomic energy project; Lloyd B. Reid, consultant on traffic engineering, formerly State Highway Commissioner of Michigan and Commissioner of Traffic for New York City; Carl H. Cotter, vice-president, Blythe Brothers Co., Charlotte, N. C., and Rear Admiral (Ret.) Navy Civil Engineer Corps.

Joseph K. Gannett, vice-president and director of engineering and research, the Austin, Co., Cleveland; Albert H. Smith, mechanical engineer (ret.), Toledo Bridge Co. and American Bridge Co., also former Toledo city engineer; Leon A. Paddock, president (ret.) of American Bridge Co., Pittsburgh, and Canadian Bridge Co. of Walkersville, Ontario, also director of American Institute of Steel Construction.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LABOR

N. Y. labor and management talk apprentice programs

More than 700 New York state employers and labor leaders met in New York City last week to hear themselves praised for the extent of the state's apprenticeship program–and then urged to carry on and make the program larger and more effective.

Although many other trades were represented, the construction trades–now training by far the largest proportion of the state's 24,000 apprentices–took the lion's share of the program spotlight, both in general sessions and in numerous specialist panel meetings.

Some of the meetings were presided over by union leaders, others by employers and State Labor Department officials.

Keynote of the session–repeated several times by other speakers–was contained in a message to the meeting from Edward Corsi, State Industrial Commissioner, who warned of the need for apprenticeship programs, lest the U. S. again "be put in the position of scraping the bottom of the barrel for workers with industrial skills."

"Eight years ago," said Corsi, "there were only some 900 workers receiving industrial training in registered apprenticeship programs. Today, there are about 24,000 enrolled in over 18,000 programs approved by the state.

"But we should look ahead to an objective of tripling that number. When we've done that, we can say we've gone forward, and have no need to look back."

Better public relations urged by NLRB head

The sometimes frightening picture of labor and management continually at each others' throat is one that must be changed for the best interests of all concerned, the head of the National Labor Relations Board warned last week.

Speaking before a meeting of the Associated Business Papers, Guy Farmer, NLRB chairman, pointed out that the problem is one of proper public relations, as much "as anything else."

"Collective bargaining, reasonable restraints on both employer and union practices, are widely accepted . . . and, by and large, management and labor have learned extremely well how to live and work together," Farmer said.

"But neither side does itself good in its public displays of conflict. It is high time they come down to earth and make an earnest and dispassionate attempt to reconcile their differences at the national level.

"Such a supercharged atmosphere–and all this controversy about amendments to the law–quite naturally increases the difficulties of our job at NLRB. In order for any law to succeed, it must have a large degree of public acceptance–and this is difficult to achieve when one group affected says the law should be repealed, and the other that it should be strengthened."

Labor briefs . . .

• **California injuries high**–Work injuries in contract construction in 1952 were second highest on the list in California, the state's Department of Industrial Relations reported. Mineral extraction, with a rate of 100 injuries per 1,000 workers was highest; contract construction, with 90 injuries, was second. Agriculture was third on the list, with transportation fourth.

• **Wage rates up**–With negotiations on new wage rates virtually completed, the New York City Building Trades Employers' Assn. reported that new hourly rates call for an average increase of 15 cents an hour, retroactive to July 1. Biggest jump went to carpenters, who gained an estimated 30 cents an hour, including fringe benefits.

• **Name new trades head**–Cleveland's City Service Director, Samuel F. David, has been named executive manager of the Cleveland Building Trades Employers' Assn., succeeding the ailing John F. Burns. David–who has indicated he will not seek reappointment after his present term expires Nov. 9–has been in the city's employ since 1951.

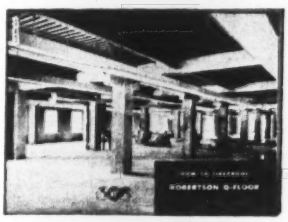
Record steel shipments for first nine months

Shipments of fabricated structural steel totaled almost 2.3 million tons for the first nine months of 1953, reports the American Institute of Steel Construction. That's the highest for a nine-month period since the building boom of the late 1920s. During September, shipments totaled 256,000 tons, a post-war high.

As of Sept. 30 the backlog of work ahead totaled about 2 million tons. Of this, 52% was scheduled for production by Jan. 31 next.

Write for these technical data books from H. H. Robertson's Q-Floor library

How to fireproof Robertson Q-Floor and Structural Steel



This booklet is an exposition of fireproofing methods employed when Q-Floor is used in conjunction with structural steel framing in a multi-story building and must meet local building code requirements. It covers most problems likely to be encountered by the designer and contains charts of typical code requirements, fire resistance ratings, and framing and ceiling details, both basic and with all combinations of extras.

Design and cost factors

With the use of this book you will find you can readily compute the cost of all types of structural floors with integral electrical wiring systems and compare them with Q-Floor. The study is based upon a typical multi-story building and is replete with charts and cost studies of all components to enable you to accurately estimate for your own vicinity. A critical analysis of this nature should be included in every architectural and engineering library.

Concrete fill on Robertson Q-Floor

This is the first of a series of booklets giving recommended practices for sub-contractors working on Robertson Q-Floor jobs. It contains detailed specifications for formulation, placement and curing of the fill, together with well-documented treatises on the nature and reactions of concrete. You will find a section on shrinkage cracking and how to control it, well illustrated with authoritative graphs and charts.

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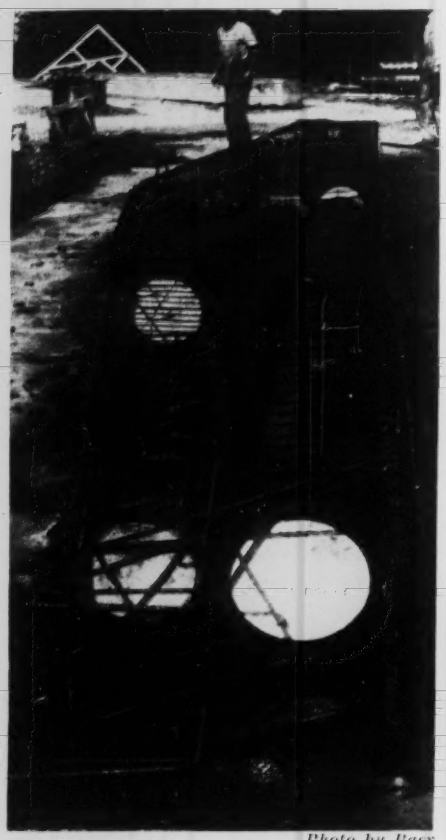
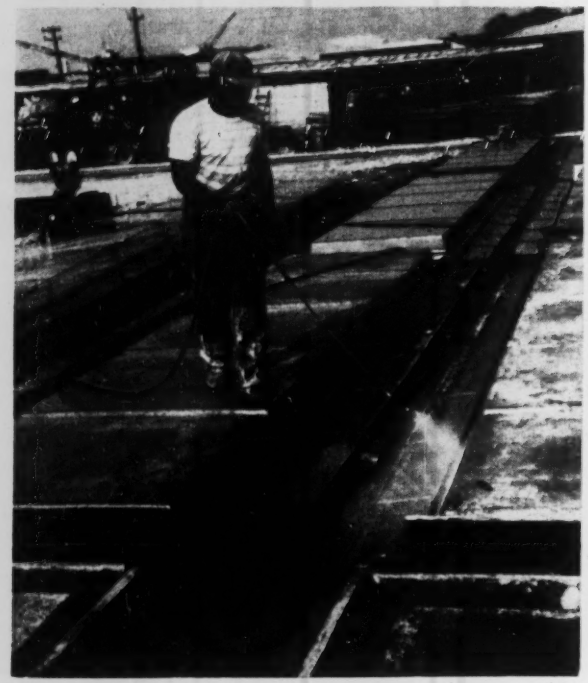


Photo by Baer

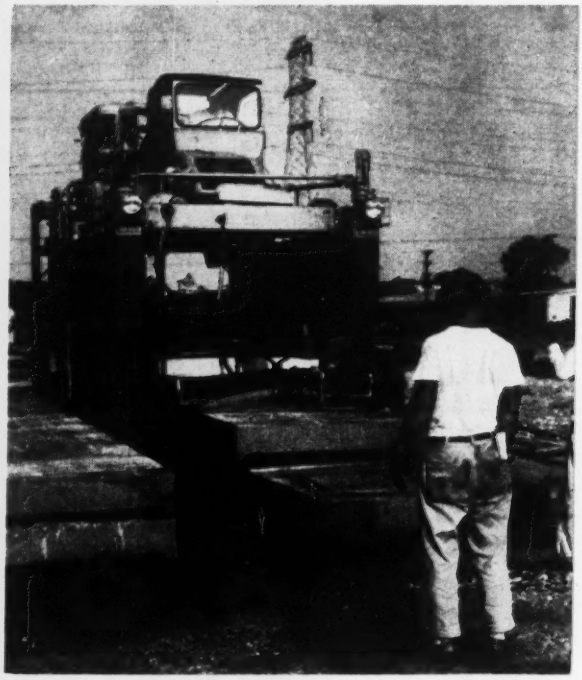
RIGID FRAMES start with cage of reinforcing, treated cardboard tubes to form hollow cores.

ENR staff photos

DROP-IN GIRDER goes into place to form part of warehouse rigid frame. Final assembly is completed by welding reinforcing and concreting the joints.



WALL AND ROOF SECTIONS are cast in concrete forms that look like inverted pans with hinged sides—here being oiled for re-use. Truck-mixed concrete is used in all sections.



VACUUM LIFT mounted on straddle truck removes finished sections from forms, moves them directly to cranes for placing. The straddle truck also handles all other precast units on the job.

Precast rigid-frame warehouse

PROJECTING of internal reinforcing rods permits final assembly of frame by welding, filling V-shaped space with concrete. Welding assures continuity.

Building big warehouses of precast concrete is no great challenge to the construction industry—even though the structural members are multi-span, rigid frames.

Techniques have been developed for casting the concrete in reusable molds and curing it quickly for fast erection. Erection methods have been simplified, and the several segments of one set of columns and roof beams can be joined together as a rigid frame, with relative ease.

These and other time-saving innovations, were pioneered and advanced considerably eight years ago during the construction of the two 600x200-ft single-story warehouses at the Naval Supply Depot, Mechanicsburg, Pa. (ENR April 18, 1946, vol. p. 546).

But even greater construction economies have been incorporated in the design of three similar warehouses now under construction at the Great Lakes Naval Training Station, near Chicago. Improved designs have also simplified construction. Both sets of warehouses were designed by the same agency (Bureau of Yards and Docks, U. S. Navy), and erected by the same contracting firm (Corbetta Construction Co., Inc., New York City and Chicago).

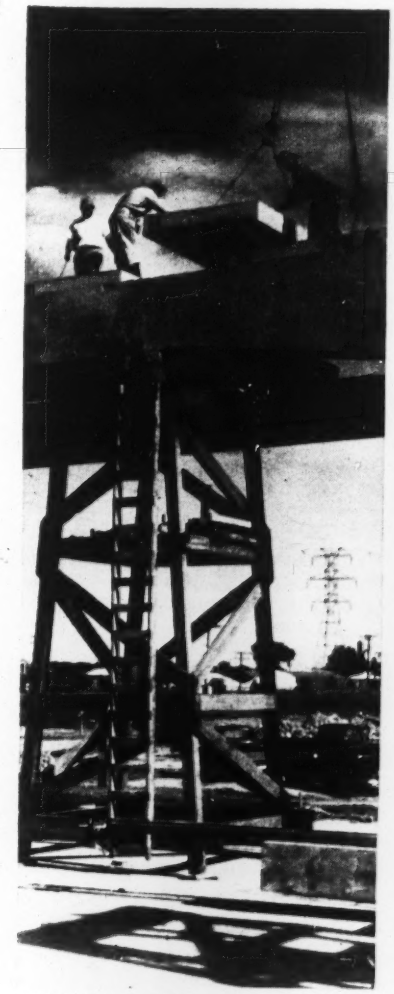
• Fewer units to handle—As Corbetta points out, the biggest single improvement—from the standpoint of construction speed and economy—of the Great Lakes warehouses over the Mechanicsburg warehouses is in the reduction in the number of precast members making up a rigid frame. The rigid frames of the Great Lakes warehouses have only one-half as many segments as do those at Mechanicsburg. This calls for somewhat heavier erection equipment but reduces the amount of labor and time required for casting and erection.

The two sets of warehouses are similar in size, three bays wide, with their transverse rigid frames made up of two exterior L-columns, two T-caps supported by two interior columns, and three "drop-in" girders.

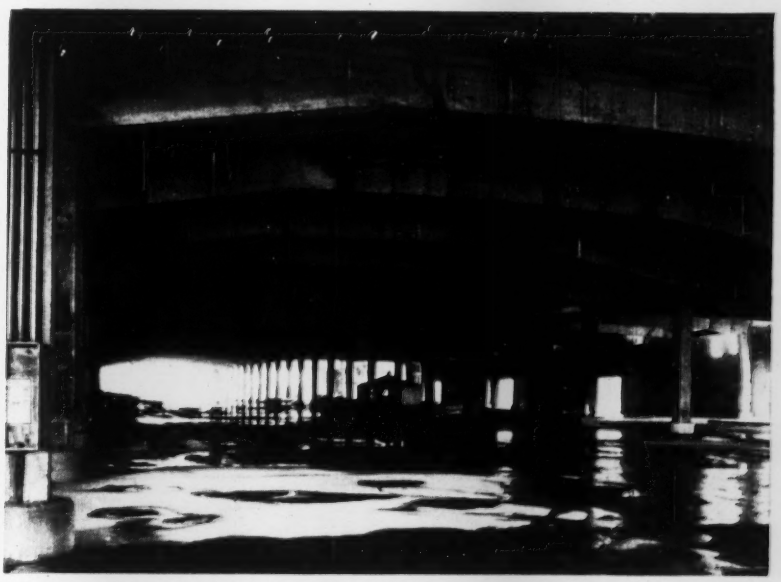
At Mechanicsburg the rigid frames have three equal span lengths of 66 ft, c-c columns. They are spaced 20 ft c-c lengthwise of the building. The rigid frames at Great Lakes have span lengths of 65-70-65 ft, and are spaced 22 ft-6 in. c-c lengthwise of the 600-ft long buildings.

• New casting procedures—Casting methods being used at Great Lakes are radically different from those used on the Mechanicsburg job due to the differences in rigid frame design. At Mechanicsburg, both exterior L-columns, the two interior T-caps and the three drop-in girders constituting one rigid frame were cast in two halves. These 14 pieces were then bolted together, in pairs, making 7 hollow-girder segments.

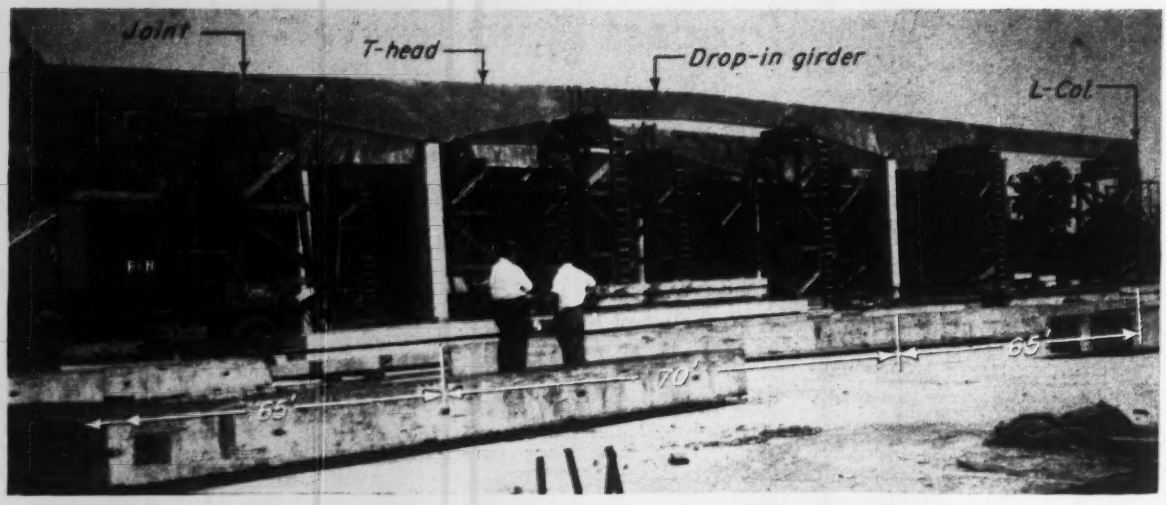
On the Great Lakes job, the seven segments of each rigid frame are cast in complete units, thus making only one-half the number of pieces to be



ROOF SECTION goes into place over rigid frame. Roof panels are 1¼ in. thick, weigh only 31 psf.



WAREHOUSE at the Great Lakes Naval Training Station is patterned after buildings at the Mechanicsburg, Pa., Naval Supply Depot. Major difference is that rigid frames in new structure are composed of single units rather than bolted pairs.



THREE BAY RIGID FRAMES are made up of two exterior L-columns, two T-caps supported by the interior columns, and three drop-in girders. The frames are spaced 22 ft c-c, the wide bays furnishing maximum storage area.

cast, cured and handled as compared with the other job.

On both jobs the L-columns, T-caps, and drop-in girders are integrated into a rigid frame upon erection, by welding exposed top and bottom reinforcing steel together, and then concreting the joints between them.

• **Reusable forms**—Profiting by his earlier experiences in precasting concrete, Corbetta has reduced his operations at Great Lakes to a simplified, mechanical procedure. Segments of the rigid frames are precast in hinged timber forms, on level concrete mold beds. Each set of forms is expected to be reused 84 times, since there are 28 rigid frames in each of the three warehouses.

No lightweight concrete is used, but weight reduction is accomplished by inserting 10-in. and 12-in. dia capped paper tubing in the reinforcing cages for the rigid frame members to form circular hollows. The tubes are left permanently embedded in the concrete.

The heavy concrete girder sections and other precast units of the warehouses are handled in the casting yard and delivered to the erection sites by a pneumatic-tired carrier equipped with vacuum lifting frames. The heaviest section, which is a T-cap, weighs 14 tons. Erection is by a truck crane having a 60-ft boom and 20-ft jib. Falsework bents for supporting the segments of the rigid frames are equipped with rollers for moving them easily from bent to bent.

Walls, roof slabs, and canopy slabs are also precast concrete. They are cast in concrete molds, which are coated with an oil spray to prevent the fresh concrete from sticking to them. There are a total of 56 of these concrete molds, on concrete mold beds. All concrete is vibrated.

Concrete is delivered to the casting yard from a nearby commercial plant, in mixing trucks. About 8¼ sacks of cement are used per cu yd of concrete, which develops an average of 1,600 psi compressive strength at 21 hours. Forms usually are stripped 24 hr after casting.

Precast canopies extend the full length along one side and about two-thirds on the other. These are supported by diagonal steel struts anchored in the exterior walls' L-columns. One side of the buildings will be served by railroad; the other side by trucks.

Although the three warehouses at Great Lakes were planned with solely functional aspects in mind, the results do have a certain attractiveness. The overall design of the buildings achieves lightness by slimness. Total weight of the columns, rigid frames and roof slab is 58 lb per sq ft of floor area. Interior columns are 18x20 in. T-heads are 5 ft 4 in. deep over the interior columns. Concrete struts between alternate rigid frames over the interior columns, are 12x16-in.

The precast roof weighs only 31 lb per sq ft. It is 1¾-in. thick with 10x3½-in. ribs longitudinally and 6x2½-in. ribs transversely. Roof and wall sections are reinforced with only 2x2″/12x12 welded wire fabric.

• **Casting sets the pace**—Casting, stripping forms, delivery to the building site and erection are synchronized, with erection schedules being geared to the casting operations. The buildings are erected complete, bay by bay, which permits interior finishing work to continue regardless of the weather. Using 60 men in the casting and stripping crews and 30 in the erection crew, at least one bay is erected daily. There are 67 precast units per bay: 7 units in the rigid frame, 2 interior columns, 10 sections of side wall, 8 sections of canopy, and 40 sections of precast roof. Additionally, there are four struts for every other bay.

Casting operations for the three 600x200-ft warehouses at Great Lakes got under way last April and erection began June 1. The first two warehouses were erected by Sept. 1, and the third one is scheduled to be closed-in by October 10. The entire project is scheduled for completion by next April.

Total contract cost of the three warehouses, exclusive of installed mechanical equipment, is $2.1 million—equal to $5.85 per sq ft of floor area. The entire project, including a fourth precast warehouse, 200x200 ft.; a central heating plant, mechanical equipment and railroad trackage, is $3.8 million.

• **Men in charge**—Roger H. Corbetta is president of Corbetta Construction Co., contractors on the entire project, and Louis P. Corbetta is directing construction. Mario Egidi is general superintendent; Oscar Henriksen, casting superintendent; J. D. Donnino, erection superintendent, and Wm. Hedricksen engineer.

The project is being constructed under the supervision of Capt. Henry C. Shaid (CEC) USN, district public works officer, Ninth Naval District. Comdr. E. C. McBurney (CEC) USNR, is resident officer in charge of construction. A. Amirikian is chief designing engineer.

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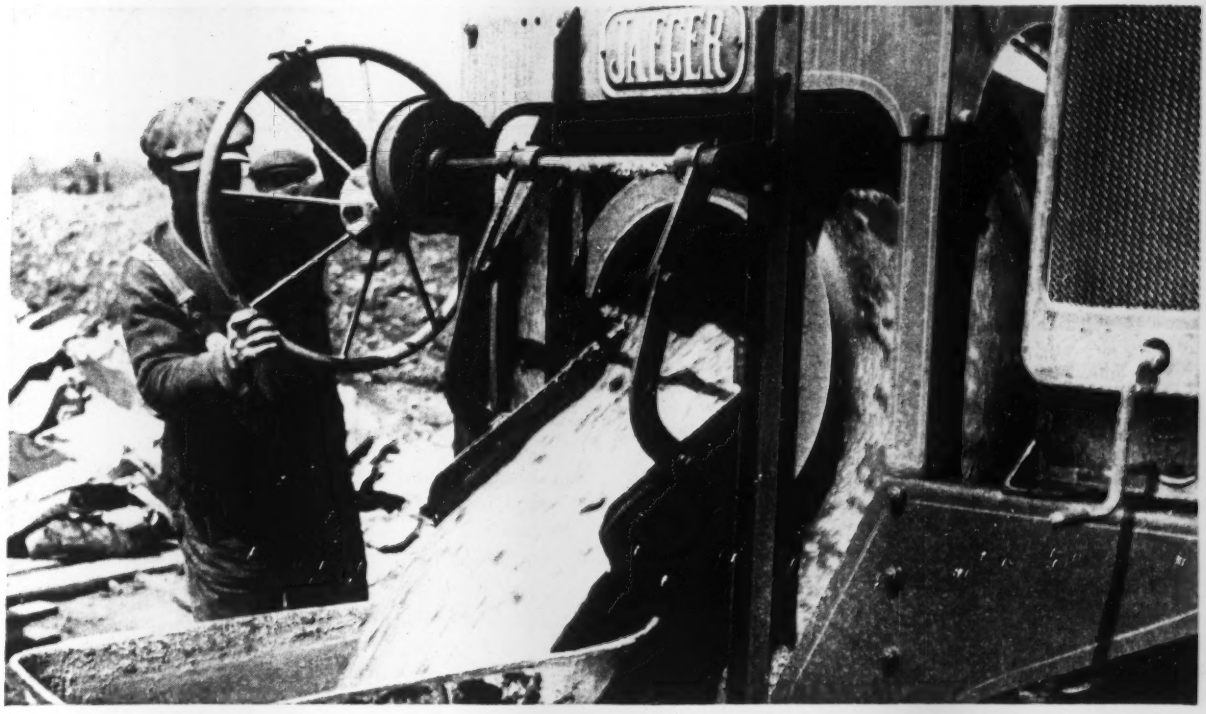

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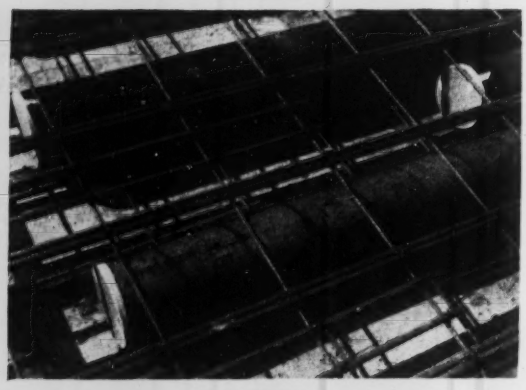
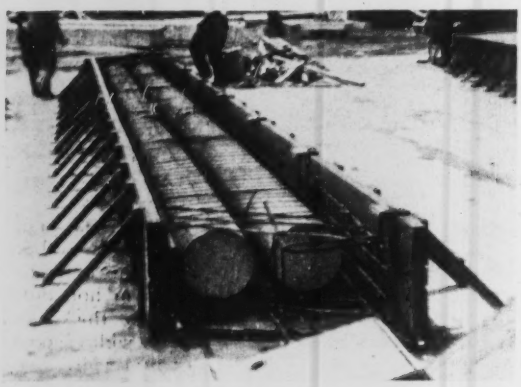


ABOVE—Sonovoid tubes are shown as used in floor and roof construction. Note placement of reinforcing steel and simple tube caps.



ABOVE—For precast bridge members, the steel wire mesh and steel rods at the top of the members are shown above prior to pouring.

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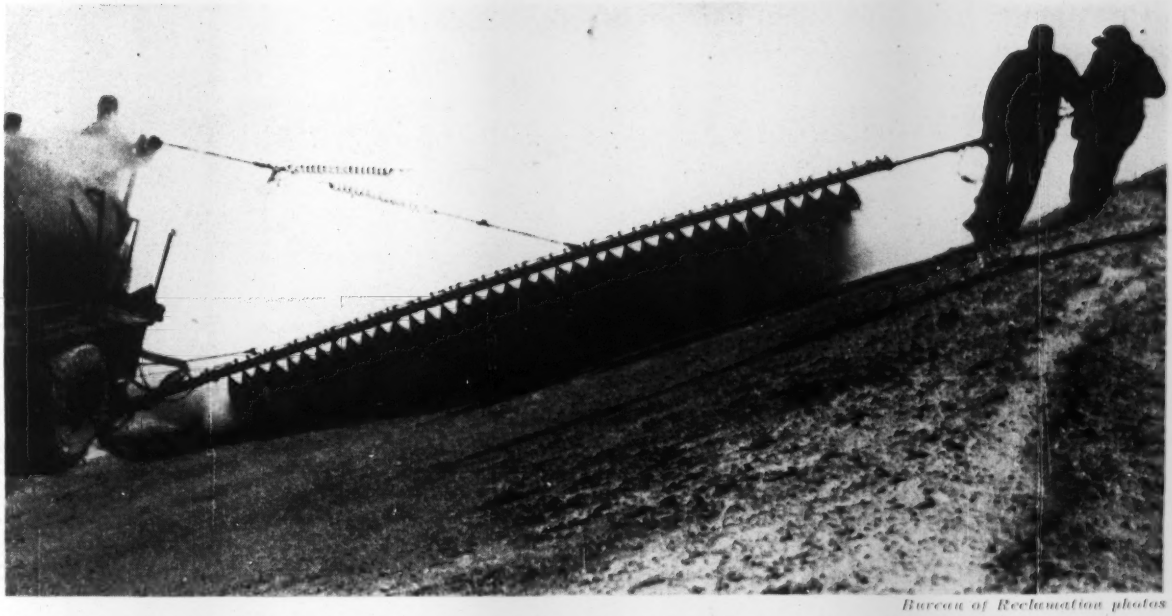


Bureau of Reclamation photos

APPLYING HOT ASPHALT by multiple-spray bar attached to distributor for buried-asphalt-membrane lining.

Lower cost irrigation canal linings

Here are results of laboratory and field work done by U. S. Bureau of Reclamation engineers

T. V. D. Woodford
Materials Engineer, Bureau of Reclamation
Denver, Colorado

During a period of rising construction costs (1946-1953), the Bureau of Reclamation has succeeded in reducing the cost of linings for irrigation canals through the development of new construction methods, greater mechanization, modification of designs, and liberalization of specification requirements.

Laboratory, design, and construction engineers have cooperated in an organized effort (ENR Feb. 6, 1947, p. 64) that has resulted in significant economies in canal construction, the conservation of water, and the reclamation of waterlogged land. And the help of contractors and manufacturers has been found to be of considerable value.

The saving is demonstrated by looking at average bid prices:

In 1946 bids for all USBR canal lining work averaged about $2.60 per sq yd. But in 1952, in spite of rising costs, the average was less than $2.00 per sq yd. And the significance of the saving is even greater when it is realized that the USBR program runs into millions of square yards of lining work.

As is usual in engineering construction, no one type of lining appears lowest in cost or most satisfactory for use in all locations. Subgrade and climatic conditions, availability of material, size of job, and service requirements, as well as local contractor know-how and competition, are all major factors affecting economy and serviceability.

The principal need for lining in irrigation canals is to reduce seepage losses and erosion. This is satisfactorily accomplished at lowest cost with a newly developed "heavy compacted-earth" lining. But suitable earth material must be available within an economical hauling distance and the job must be large enough for the effective use of large earth-moving and compaction equipment.

Asphalt membranes, both sprayed-in-place and prefabricated, have proved to be low-cost and satisfactory in the control of seepage but usually require a protective cover which governs their erosion resistance.

Portland-cement concrete linings, long considered "tops" for irrigation canals—but often too expensive, have been reduced in cost by elimination of reinforcing steel and the development of slip-forms for more economical placing. A wide variety of other materials and construction methods has been experimented with and some of considerable promise are yet in the development stage.

RECENT AVERAGE LINING COSTS

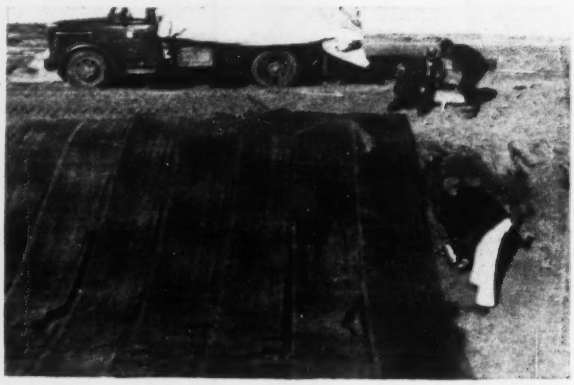
Type of lining	Cost per sq yd
Heavy compacted earth	$0.60
Sprayed-in-place asphalt membrane	0.95
Prefabricated asphalt membrane	1.10
Slip-form placed, unreinforced concrete 2-4 in. thick	2.25

• **Heavy compacted-earth lining**—This type of lining was developed to utilize large earth moving and compaction equipment as employed in the construction of earth dams and grade fills. Selected impervious soil is placed and compacted in both the bottom and side slopes in horizontal layers approximately 6 in. thick. To accommodate standard width equipment operating longitudinally, successive layers of earth in the side slopes are 8 to 10 ft in horizontal width. Such construction permits continuous efficient operation of both placing and compaction equipment on the side slopes as well as in the bottom.

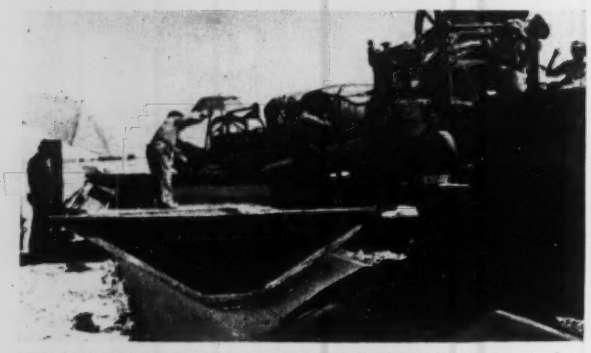
Experience to date has established an average price of less than 60c per sq yd of finished lining surface for heavy compacted-earth lining constructed under favorable conditions. A properly constructed heavy compacted-earth lining has been found by actual field tests to be highly impermeable; losses are about 0.07 cu ft

These newer irrigation canal lining methods reduce costs:

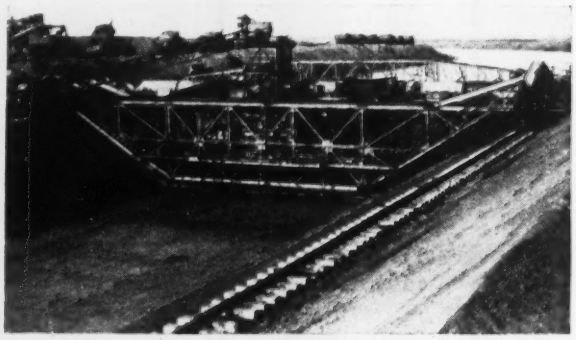
SPRAYED-IN-PLACE-ASPHALT MEMBRANE — Membrane, ¼ to ⅜ in. thick, is sprayed on prepared subgrade by hand methods or by multiple spray bars. Earth backfill protects membrane. Canal must be large enough to use insulated truck or tank car lots of hot asphalt.



PREFABRICATED ASPHALT MEMBRANE—Suitable for smaller canals, this involves asphalt membrane material that comes in rolls. Material is lapped and sealed in place. Some newer prefabricated membranes do not require earthfill protection.



SUBGRADE-GUIDED SLIP-FORM CONCRETE—Limited to smaller canals, this lower-cost construction was made possible when USBR engineers determined that steel reinforcing was not necessary and that minor variations in alignment and surface smoothness could be permitted.



RAIL MOUNTED SLIP FORM machines have been in use for a number of years. Cost of setting and moving rails is prohibitive in smaller canals. But rails are still necessary to support heavy slip-form even though the concrete lining may be unreinforced.

per sq ft of wetted area per 24 hours. This loss is comparable with the loss from a good concrete lining.

In areas where high ground water or expansive soils are predominant, heavy compacted-earth lining actually may be preferred because its greater weight and flexibility make it less susceptible to damage by those forces.

Materials for heavy compacted-earth linings are selected on the basis of laboratory tests for gradation, liquid and plastic limits, compaction, permeability, and, in special cases, shear tests. Control similar to that required on earth dam construction is needed for the placing of heavy compacted-earth linings. The density and optimum moisture control is based on a standard laboratory compaction test which is comparable with the ASTM compaction standard.

A well-graded gravel with sand-clay binder is the most suitable material for compacted-earth linings because it provides a dense impervious lining having good erosion resistance. If the material contains large-sized gravel particles, this type of lining usually will withstand velocities 10 to 15% higher than unlined canals.

Clayey gravels are next in suitability because erosion resistance and stability decrease as the clay content is increased. Following, in order of decreasing desirability, are sand with clay binder and clayey sands.

• **Sprayed-in-place asphalt membrane**—Although asphalt is a relatively inexpensive construction material, prior to the bureau's development program, its use for lining canals had been rare and of limited success. Investigations and trial installations using this material began with the placing of a relatively thin membrane of asphalt cement over the prepared canal subgrade and leaving it exposed to the weather. Such a membrane was easily applied by heating the asphalt and spraying it directly onto the subgrade. However, it was difficult, and sometimes impossible, to obtain sufficient bond to the subgrade to keep the membrane in place. In addition, the asphalt membrane thus exposed to the weather and possible mechanical injury did not have adequate life serviceability. Out of necessity, therefore, came the development of covering the membrane with as stable a natural material as is economically available, gravelly soil or gravel and clayey soil being preferred.

This type of construction, called buried asphalt membrane, has proved satisfactory under favorable conditions as well as low in first cost. The effectiveness of a properly installed buried asphalt membrane for the control of seepage has been well established. However, because of limited experience, the life serviceability and the ultimate average annual cost has not been determined definitely. Installation costs for this type of lining averaged little less than $1.00 per sq yd including all material and labor, prepara-

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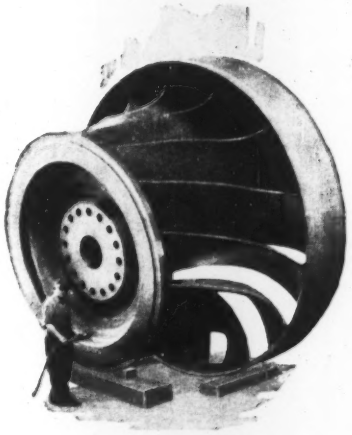

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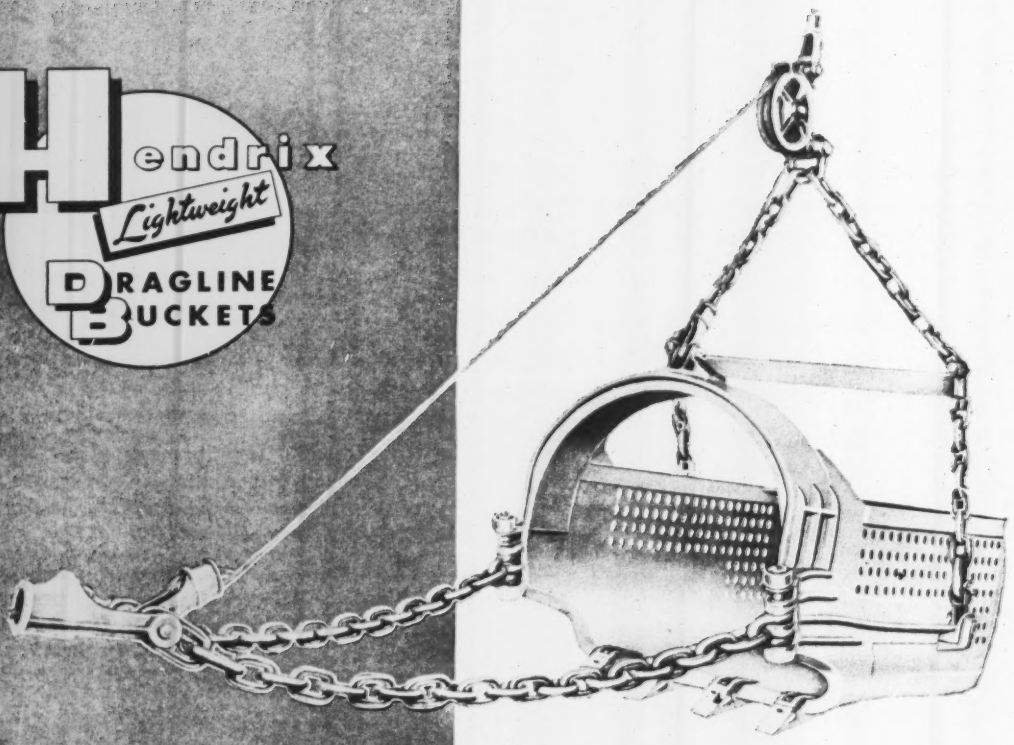

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MANSFIELD, LOUISIANA

tion of subgrade, and placing cover. Higher costs will usually result when gravel for cover is difficult to obtain and must be hauled a considerable distance.

Essentially, this lining consists of a membrane (¼- to ⅜-in. thick) of a special asphalt sprayed in place at high temperature (400° F) to form a waterproof barrier which is held in place and protected against injury and weathering by a layer of earth and gravel. Details of construction procedure were described in ENR Feb. 28, 1952, p. 39.

As the purpose of the cover material is to hold the membrane in place and to protect it from the sunlight and mechanical damage, the kind of cover material and the depth of cover depend on such factors as wave action, water turbulence, and velocity. Where water velocities are below 1½ fps and beaching action from waves is not likely to be serious, the soil removed from the canal ordinarily may be used. However, if soil from the canal excavation is not suitable for use as cover material, it may be necessary to import material of greater stability. Where water velocities are comparatively high, gravel blankets usually of pit-run material should be placed over the soil cover to depths of from 3 to 6 in.

• Prefabricated asphalt linings—The low cost of sprayed-in-place asphalt membrane lining is not possible on jobs too small to utilize the minimum size tank car or truck of hot asphalt direct from the refinery. Moreover, installations to control seepage in short reaches of canal or in farmers' ditches seldom require enough asphalt to justify the special equipment and experienced crews necessary for proper and safe application of the hot material.

Accordingly prefabricated asphalt membranes have been developed which are supplied to the job in rolled sheets usually 36 in. wide. A variety of types of prefabricated linings have been made available for laboratory tests and field trial installations. Most of these are about ⅛ in. thick, reinforced with a mat of glass fibers, rag, or asbestos. Such materials are used as a buried membrane placed in the canal, either longitudinally or transversely and covered with earth and gravel in the same manner as the sprayed-in-place membrane. Adjacent strips are overlapped 2 in. or more and sealed with an asphalt cut-back or mastic.

Although experience with prefabricated buried asphalt membrane lining is limited, indications are that seepage may thus be adequately controlled on the small job at a cost only about 15% above that for the sprayed-in-place membrane on the large job. The prefab lining itself is available at several processing plants in the western states for 30 to 40c per sq yd.

This type of installation is expected to be quite limited in Bureau of Reclamation construction, but it is likely that a large demand may be developed in small irrigation operations or among individual farmers.

Recently developed is a much heavier prefabricated asphalt canal liner designed to be used without a protective cover. The different manufacturers use different schemes in the construction of this material. But it is essentially composed of low penetration asphalt combined with filler material and reinforcing fabric or fibers.

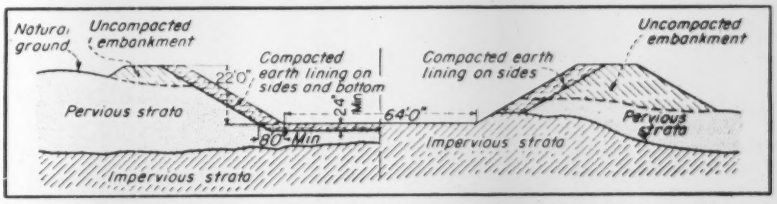
The lining is supplied in sheets usually 36 in. wide and varying in length from 8 to 13 ft according to order. The thickness ranges from $\frac{3}{16}$ to ¼ in., the thinner sheets being designed for application in two layers. The weight of the ¼ in. material is about 30 lb. per sq yd. The cost of this material is in the range of 80c per sq yd at the factory. At present the material is available only in Houston, Tex., and Chicago, Ill.

The bureau has made several trial installations of this material. Obviously, the cost of lining with this heavy weight prefab will be more than with the lightweight material. However, if it proves serviceable without a protective cover, the added cost may be justified under special conditions.

• Concrete lining developments—A 1948 survey indicated that unreinforced concrete lining functioned equally well as steel reinforced lining. Accordingly, USBR design practices were changed to omit reinforcement in concrete canal lining—except in special cases where a break in the canal may endanger the safety of a community or cause damage to exceptionally high priced property or crops.

The elimination of reinforcing steel resulted in a saving of some 20% of the total cost of lining. Subsequent changes in specification requirements

HEAVY COMPACTED EARTH—Selected earth placed and compacted by method similar to earthfill dam construction gives lowest unit costs. But canal must be large enough for heavy equipment and suitable material must be economically available.



HEAVY COMPACTED EARTH LININGS can be adapted to local conditions as shown in these two typical cross sections. Fill on side slope must be thicker than fill on canal bottom to accommodate standard earth-moving equipment.

which increased the permissible variations for line, grade and final finish further reduced construction costs, and were of great significance in encouraging the development of a subgrade-guided slip-form for use in small canals and laterals.

Slip-form machines operating on rails at the top of each bank have been in general use for a number of years in lining large canals with concrete and have reduced the cost effectively. However, such equipment is not economically feasible for use in smaller canals and farm laterals, where the volume of concrete per unit length of canal is relatively small. That is because the cost of setting and removing the guide rails is high.

With the elimination of reinforcing steel a small slip-form could be supported directly on the previously prepared subgrade. This newly developed equipment—called a subgrade-guided slip-form—combines a forward skid plate shaped to fit the canal, a rear screed or troweling plate of the same shape but offset from the skid plate by the desired lining thickness, and a middle hopper open to the subgrade bottom and side slopes. Concrete dumped into the hopper oozes out over the canal perimeter and is struck off, consolidated, and troweled by the rear plate as the slip-form is dragged forward by one or more tractors or by a motor-driven winch mounted on the slip-form.

Concrete for most of these small slip-forms has been mixed and supplied by transit-truck mixers, but in some instances where air-entrained concrete was used, batches have been hauled in dump trucks from a central mixing plant. Other jobs have employed highway paving mixers which operate alongside the canal and move forward with the slip-form to supply it with concrete.

It is not unusual for small subgrade-guided slip-forms, in combination with adequate mixing equipment, to place a mile or more of 1½ in. thick, unreinforced lining in a day in ditches having lining perimeters of 5 to 6 ft. Short stretches of this size ditch have actually been lined at a rate of about one mile an hour, demonstrating the possibilities if sufficient concrete can be available continuously.

An adjustable plow-type ditcher has proved satisfactory in most localities for excavating and final shaping of the earth section of these small canals. The ditcher is pulled by one or two tractors operating in the bottom, straddling the ditch, or on both banks, depending on the size of the section. In new excavation, several passes of the ditcher are required to remove the earth and properly shape the section for lining.

The cost of unreinforced-concrete lining 3 in. thick placed by subgrade-guided slip-form will average about $2 per sq yd on large jobs. Contractors on current private work in New Mexico, Arizona, and California are using this type of equipment for placing 1½-in. concrete lining in small laterals and farm ditches for as little as $1.30 per sq yd.

• **Other materials and methods**—In the search for lower-cost materials and methods for controlling seepage and erosion in irrigation canals, any idea that showed reasonable promise was investigated. Space here has limited the discussion to those developments believed to be most important. Many materials and methods were tried and eliminated after preliminary laboratory tests. Some were utilized in small scale field tests and others have been or are being demonstrated on a limited basis in bureau construction work. Worthy of mention are:

(1) Advancements in the use of bentonite through the development of mechanized lower-cost methods of placement and the formulation of more specific construction specifications. Experience with bentonite has demonstrated the effectiveness and serviceability of this material in the control of seepage but the former customary construction methods involving considerable manual labor are not economical.

(2) Full scale field installations of asphaltic concrete (hot-mix) lining placed by special subgrade-guided slip-forms for determination of its relative cost and serviceability.

(3) Extensive field grouting tests of a variety of materials to determine their effectiveness in sealing bank and subgrade leaks.

(4) Field experimental installations of soil-cement lining included some placed and compacted at optimum moisture, some of plastic consistency placed by special subgrade-guided slip-form, and some placed dry and wetted in place by subsequent ponding.

(5) Shotcrete (pneumatically applied mortar) lining has been used widely and has given satisfactory service, particularly in the southwestern states, for many years. This type of lining, normally 1 to 2 in. thick, usually will cost as much as slip-form placed concrete lining an inch thicker. However, it has specific advantages in lining over a rough subgrade, as through rock cuts, or on side slopes too steep for other types of linings. Experiments with shotcrete involved variations of thickness, mix, and application in an effort to lower the cost.

(6) Experimental installations of asphalt macadam (gravel penetrated with asphalt) and thin shotcrete covers for asphalt membrane linings.

(7) Laboratory and field tests to develop a method of sealing canals in service (underwater sealing) with asphalt emulsion and/or other materials. Still in the development stage, such a method is urgently needed in the Southwest where seepage losses are excessive but canals are in year-around service and can be unwatered only a few days at a time during the winter.

(8) Tests with chemical stabilizers including considerable laboratory work with chrome-lignin (principally a waste product from pulp manufacture).

Readers who may be interested in further details concerning these developments or additional information on the subject of canal linings, are referred to the publication *Linings for Irrigation Canals*, July, 1952, which is available in the office of the Chief Engineer, Bureau of Reclamation, Denver Federal Center, Denver, Colo., at 65c a copy.

Standards bureau speeds soil corrosion tests

A recent study by the National Bureau of Standards has shown that reliable data on the corrosion of ferrous metals in soils of various types can be obtained in the laboratory in a period of six months. Usually field tests of ten years or more are required.

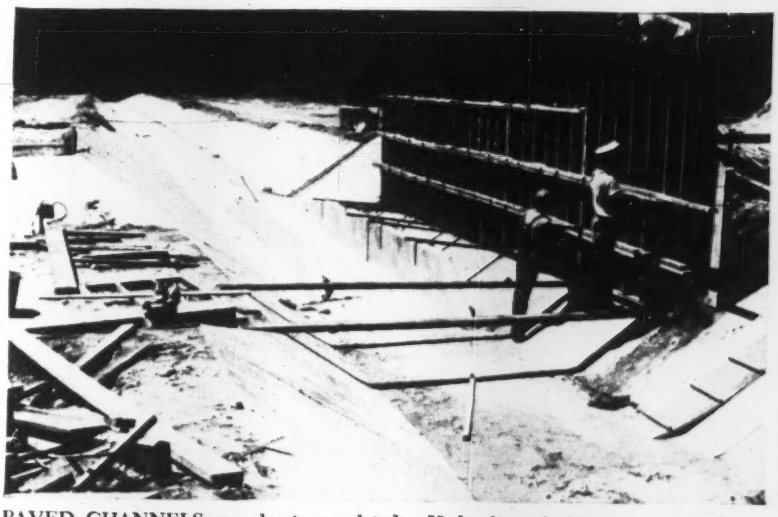
In the NBS investigation, conducted by W. J. Schwerefeger of the Bureau's corrosion laboratory, corrosion was produced in small laboratory cells by differential aeration of metal discs in contact with soils within the cells. The results for 15 different soils showed good correlation with the corrosion observed on wrought specimens in long-term exposure tests.

Central agency set up for paint and coatings

Col. Delbert B. Freeman, Division Engineer, Upper Mississippi Valley Division, Corps of Engineers, St. Louis, Mo., has announced that the Rock Island District of the Corps has been designated as the central agency for investigation and advice on protective paint coatings for civil works projects.

The "Engineer Paint Laboratory" at Rock Island, Ill., will serve all field offices of the corps in the U. S. by testing paints and paint materials for compliance with specifications, promoting the use of the most economical protective materials and methods, advising on protective coating problems in construction and maintenance and evaluating new techniques, materials and equipment.

GREAT GULLIES like this one ought to be a thing of the past at Whiting Naval Air Base now that . . .



PAVED CHANNELS are about completed. Hydraulics of this intersection, lateral entering main from left, calls for fins in bottom and vertical wall opposite.

High-speed channels spell low-cost airfield drainage

Ensign Howard Jacoby, CEC
Assistant Public Works Officer
U. S. Naval Auxiliary Air Station,
Whiting Field, Milton, Fla.

Six miles of paved channels will soon shed rains up to 4 in. per hour that have threatened to wash away Whiting Field, remote Naval Air Station in western Florida.

Surface drainage structures now being finished to carry water down the sides of a plateau the airfield occupies will pick up storm water flow and chute it at 40 fps on slopes steep as 10%, where now there are sandy gullies—deep and getting deeper.

The Navy's Bureau of Yards and Docks chose the $724,000-open channel project as 60% cheaper than pipe conduit. But before the channels could be built, there were design problems never before met, problems on which the Department of Agriculture's Soil Conservation Service collaborated with model tests run in St. Anthony Falls Hydraulic Laboratory, Minneapolis.

• **Background**—Naval Auxiliary Air Station, Whiting Field, is 40 miles from Pensacola, Fla.

Urgent construction back in 1943 left its 500 acres of asphaltic-concrete runways with inadequate protection from soil erosion. Even with stopgap steel sheet-piling drop structures as an attempt to control existing earth channels, by 1947 a number of runways were endangered. The startling rate of soil erosion prompted the Navy to call in the Soil Conservation Service.

SCS faced some imposing physical factors: the ten-year design storm of 4.0 in. per hour; grades as steep as 10%; soils, loamy sands 30 to 60 in. in depth covering weak sandy clays. In this area the smallest unprotected channel soon erodes into a gulley.

First consideration was given to reducing by every possible means the amount of peak runoff. Impounding areas for temporary storage were decided upon wherever feasible. But the most important step in this respect was a decision to provide improved vegetative cover for 2,200 acres of soil that would soften impact of high-intensity rainfall, increase water infiltration and reduce sediment in runoff. These measures are expected to reduce peak runoff from flash storms as much as 50% in some areas.

• **Design**—Trapezoidal channel sections were chosen as a compromise between hydraulic efficiency and ease of construction. All ditches designed for velocities less than 10 fps are being lined with a rich plastic soil-cement mixture. Those for greater velocities are being paved with standard reinforced concrete.

The smallest channels have 4-ft wide bottoms and side slopes ranging from 1.5:1 to 4:1. The largest ditch measures 6 ft across the bottom and 28½ ft across the top with a depth of 7.5 ft.

• **Help from lab**—Early in the design the need for hydraulic model studies became apparent. Sufficient reliable information was not available on flows from large pipes into open channels, on junctions of low and high-velocity laterals and mains, and on energy-dissipating structures at high-velocity channel outlets.

A completely original energy dissipator was developed for four channel outlets on large deltas of water-bearing sand. A normal stilling basin design could not be used because the deep excavation required would be too costly. Needed was an outlet that could be constructed at the surface and supported on piles.

After numerous tests, the cantilever design shown in the sketch was adopted. The 3-ft 10-in. sill produces a hydraulic jump and a relatively calm

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pool of water is formed between sill and weir. The particular dimensions illustrated can dissipate energy of a discharge of 600 cfs at a velocity of 40 fps.

A second series of models was tested to determine a satisfactory straight drop spillway to be used as a grade control structure at five locations. Whiting Field already had some similar structures of steel sheet-piling that were performing poorly. The proportions shown in the sketch were adopted for a flow of 176 cfs and a tailwater depth over the end sill of 2.5 ft.

Rating tests then were run on the box-inlet drop spillway shown. This type stores stormwater flowing at greater than a given rate. Maximum discharge is determined by size of the rectangular orifice in the headwall and difference in water level on opposite sides of the headwall. The spillway shown discharges 207 cfs through its 4x6-ft orifice when headwater is at El. 158.5 and the tailwater is at El. 156.0.

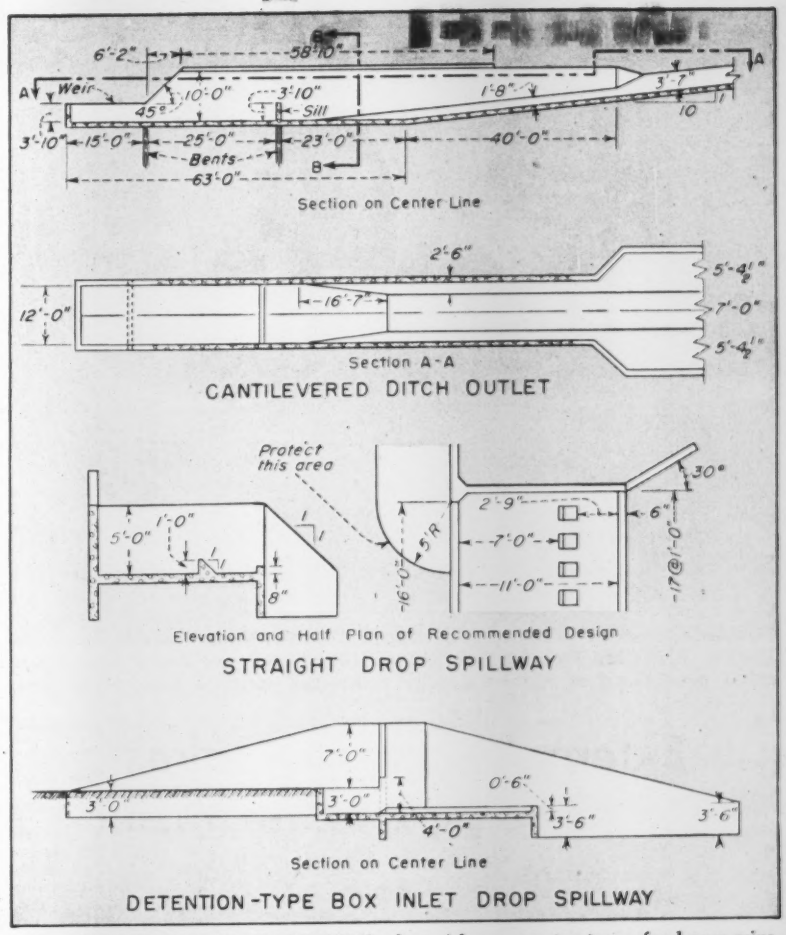
Model studies were made on channel-to-channel junctions because of difficulties anticipated in joining two streams of water, one (or both of which) flowing at supercritical velocities. It was found that laterals didn't have to be curved into the mains. Formation of jumps and standing waves in right angle junctions are prevented by submerged piers, or fins, and high vertical walls opposite and perpendicular to the lateral. Piers are 2 and 3 ft high, 6 in. thick and are located along bottoms of mains to dampen transverse waves generated by junction of two flows. The vertical walls, replacing sloped channel sides, prevent expansion of flow at junctions and also serve as splashboards.

• Construction begins—All channels are first graded and compacted to a true section. Paving procedure differs slightly for each type of lining.

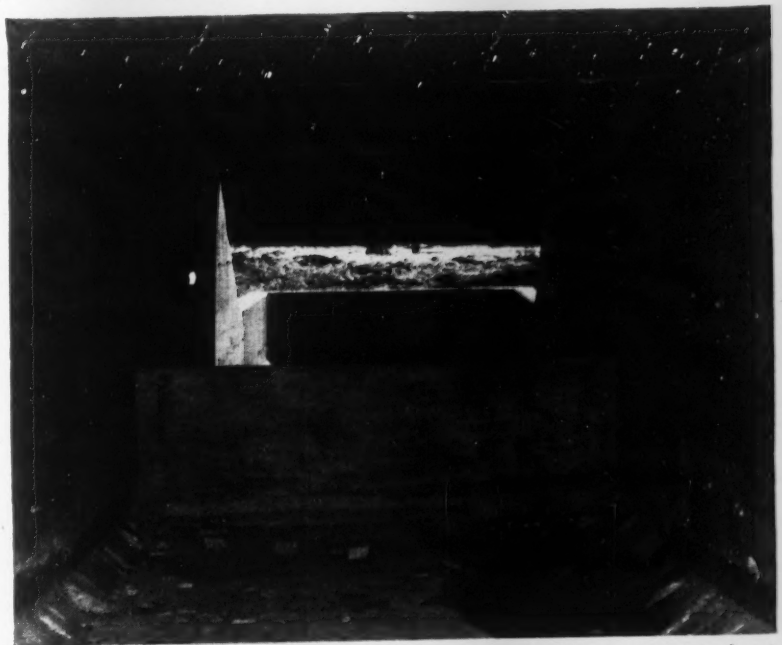
Soil cement (for velocities under 10 fps) is produced in a portable concrete mixer. Portland cement comprises 13% of the mix with the remainder selected local sandy soil. Enough water is added to produce a consistency corresponding to plastering mortar. Minimum mixing time is two minutes.

The mixer discharges into the bucket of a front-end loader, thence into forms. Hand leveling, screeding, bull-floating, brushing, and spraying with curing compound follow in quick order.

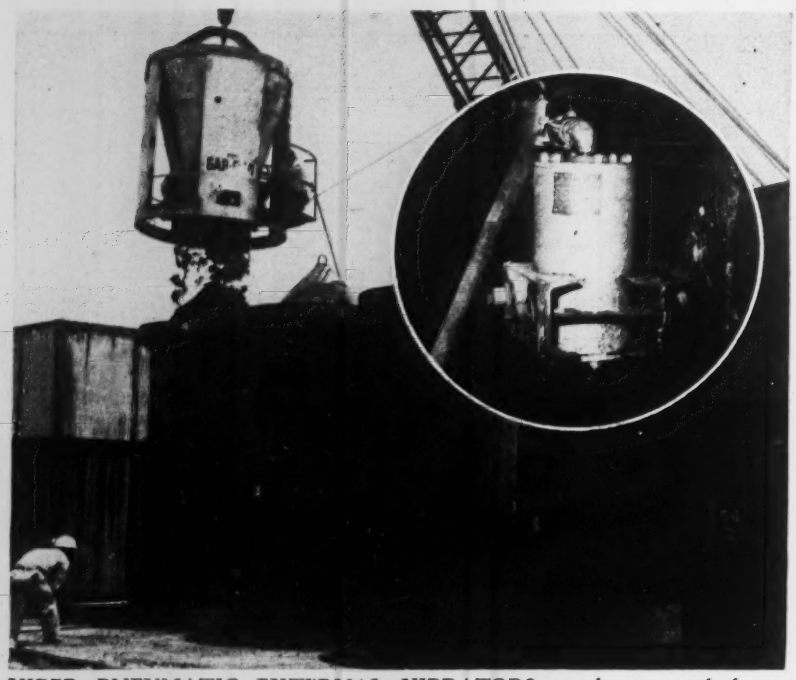
Consecutive 12.5-ft sections are poured. This is believed to give the lining better continuity than if alternate sections were poured and the gaps filled in afterwards. After screed-



OUT OF THE LAB CAME DESIGNS of special-purpose structures, for heavy rains, sandy soils and steep slopes.



INSIDE LOOKING OUT—This is section B-B of the ditch outlet structure (see above).



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• **Controlled high speed** external vibration of steel forms can double production of better quality concrete pipe. It produces a smoother finished surface inside and out, and a uniform, high strength section free of rock pockets or honeycomb. It also permits the use of dryer, higher strength concrete, and faster stripping.

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Vibration of forms from the bottom up increases the speed at which dryer concrete mixes can be placed. It also saves labor, since one man can move and operate the vibrators for several forms.

VIBER MODEL PX pneumatic external vibrators offer effective rotary vibration in a wide range of amplitude-frequency combinations up to 12,000 RPM. Leading pipe manufacturers have used VIBER PX vibrators to produce thousands of tons of pipe in the United States and abroad. It is not only the best method of manufacture, but for longer sections with heavier reinforcing cages and less form clearance it may be the *only* feasible method.

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ing, templates are removed and the slots are carefully filled with lining material. Full expansion joints are left every 100 ft, while dummy contraction joints are cut every 25 ft. Depth of the soil cement lining varies from 5 to 6 in. With no reinforcing it is surprising how little surface checking has developed. The addition of light bar reinforcement practically eliminates it.

Using these methods, a crew of ten concrete workers is averaging 200 sq yd of lined ditch daily.

• **Concrete lining**—Six bags of cement, with 6 gal of water per sack, are used per cubic yard of concrete. Aggregate is washed local riverbed gravel, graded from ¾ to 1½ in., and good local sand. Mix proportion is 1:2.2:2.7. An ounce of air entraining agent is added for each sack of cement to improve workability. Slumps are held between 2 and 4 in.

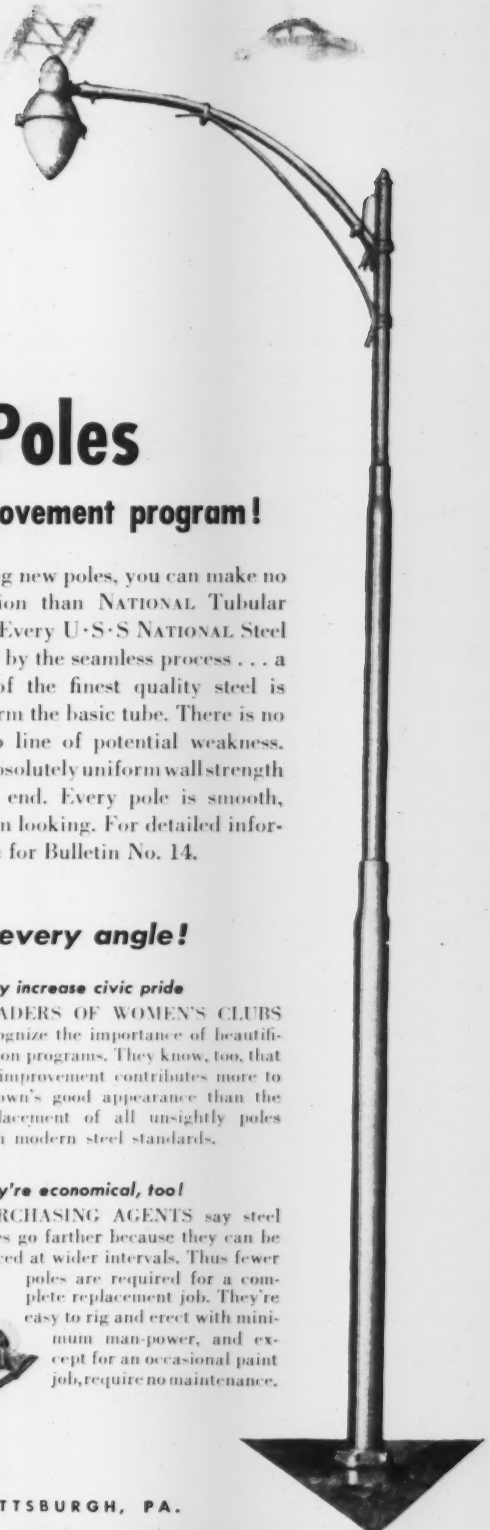
Forms are set on 12.5-ft centers and reinforcing (mostly temperature steel) is placed. Transit concrete mixers, loaded from a central batching plant on the station, deposit directly into the ditches. The mix is hand-worked into place, spaded, screeded, floated and brushed much as the soil cement is. A heavy application of curing compound completes the operation.

Consecutive sections are poured, again to eliminate joints and improve continuity. Depth of lining varies from 6 to 8 in. Full expansion joints with supporting mat, dowels and copper water seal are left every 100 ft. Contraction joints are sawed at 25-ft. intervals from 24 to 72 hours after pouring.

All inlet, outlet, detention and grade control structures are of 7-bag reinforced concrete.

• **In charge at project**—W. A. Allaband, who was loaned to the Navy by SCS is currently project engineer, also assisted with the design which was supervised by A. F. Moratz of SCS, Milwaukee regional office. F. W. Blaisdell supervised model studies at the St. Anthony Falls Hydraulic Laboratory, all SCS research here being performed in cooperation with the Minnesota Agricultural Experiment Station.

In charge of the job for the Navy is Cdr. H. F. Winn, (CEC) USN, officer in charge of construction in the Pensacola Area. Smith Engineering Construction Co. of Pensacola is general contractor, with Dunn Contracting Company, Gainesville, Fla., subbing the ditch-paving and structures work. R. W. Herndon is superintendent for Dunn. The project is just about finished.



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POLICEMEN see first hand just how hazardous many old types of poles are. If they had their way, every pole would be a steel pole . . . and there would be fewer of them. NATIONAL Seamless Steel Poles can be spaced at wider intervals. And they offer less visual obstruction.

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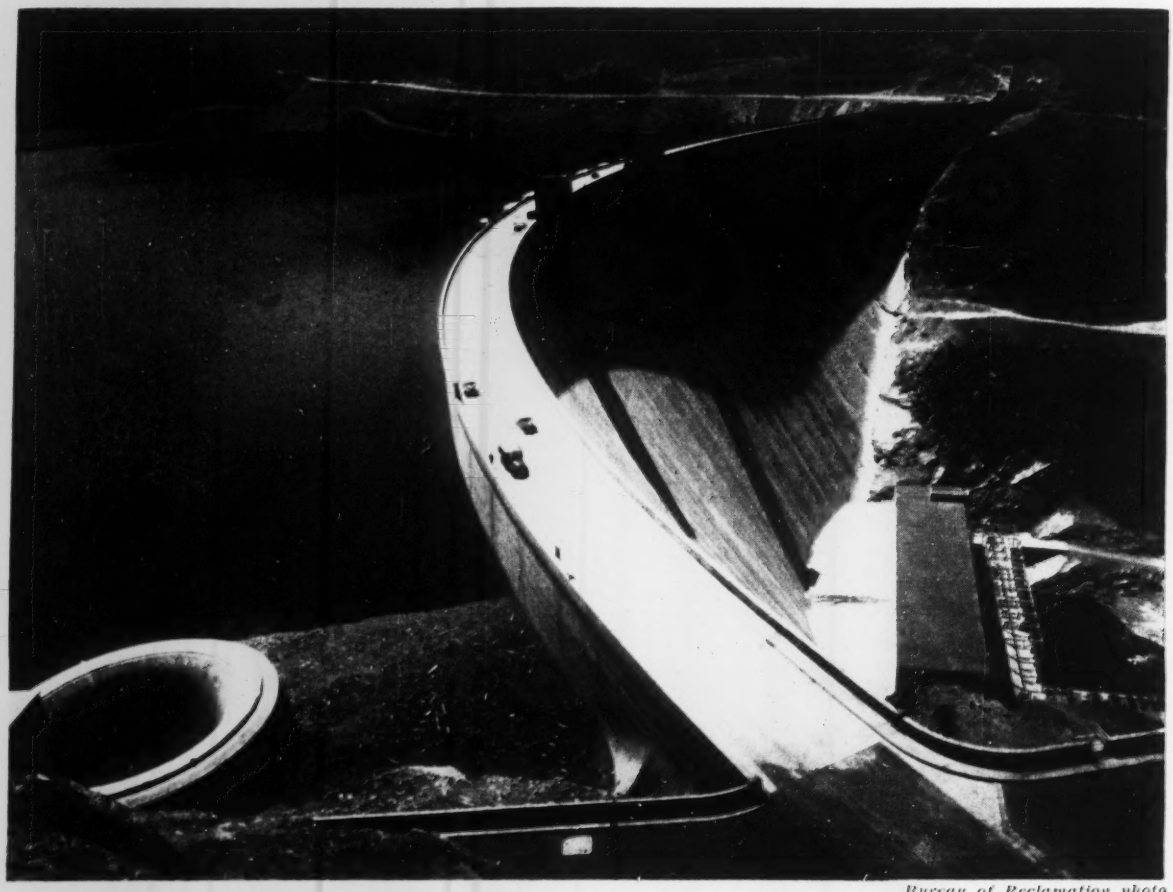
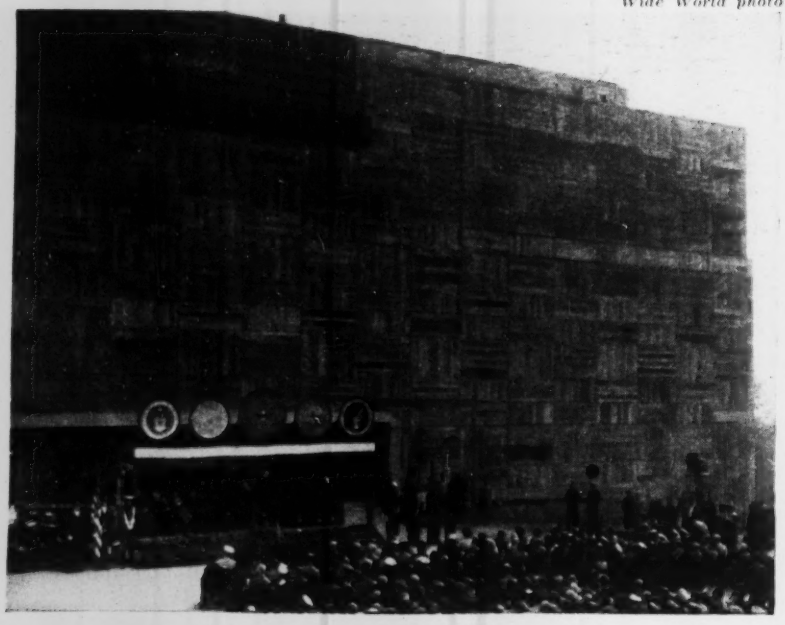


Bureau of Reclamation photo

TOURIST ATTRACTION

Construction at Hungry Horse Dam went into its final phase with the near-completion of this new roadway—part of 24.5 mi of roads skirting the west side of the reservoir. Still to be completed are 47-mi of additional roadways and three bridges that will open up this rugged recreational area to tourists.

Wide World photo



WINDOWLESS BUILDING

Dedicated late last month, the Armed Forces Institute of Pathology at Walter Reed Army Medical Center, Washington, D. C., was designed to resist the effects of an A-bomb. Exterior walls are made of 12-in. thick reinforced concrete. These were given a textured finish by lining the forms with boards of varying width and thickness laid horizontally or vertically to panelize the vast unbroken wall surface of the five-story building. Faulkner Kingsbury & Stenhouse, of Washington, were architects-engineers and Cramer-Vollmerhausen Co., Inc., the general contractor.

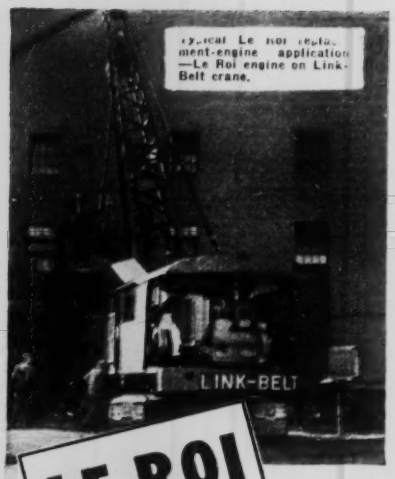
ATOMIC SPHERE

Three times the diameter; 27 times as big—That's how this steel sphere compares with the largest built previously. Now completed at General Electric's Knolls Atomic Power Laboratory, near Schenectady, N. Y., for enclosing experiments on an atomic power plant for a submarine, it has a diameter of 225 ft. Construction problems were described in ENR April 9, p. 32.

Wide World photo

TRAIN SHED

Concrete train shed in Vicenza, Italy, is made of precast roof slabs and cast-in-place, reinforced concrete rigid frames. The 276-ft long by 48-ft wide roof is supported by the frames on 23-ft centers. The two outer rows of roof slabs are suspended at the bottom of the frames, and the inner rows of slabs, along either side of the glazed center strip, are set at the top of the frames. The glazed center strip consists of inverted dish-like circular glass lights set in concrete with a plastic expansion joint around them. Longitudinal expansion joints for the structure run along either side of the glazed center skylight, and transverse expansion joints extend through the 4th and 8th rigid frames. The shed was designed by Prof. Luigi Stabilini of Milan.



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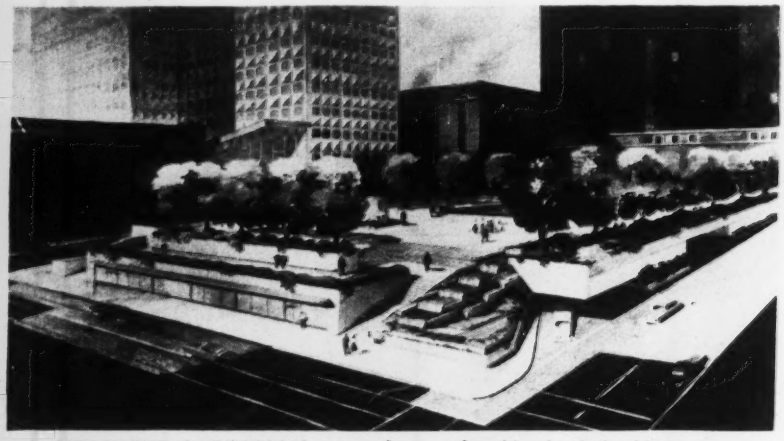
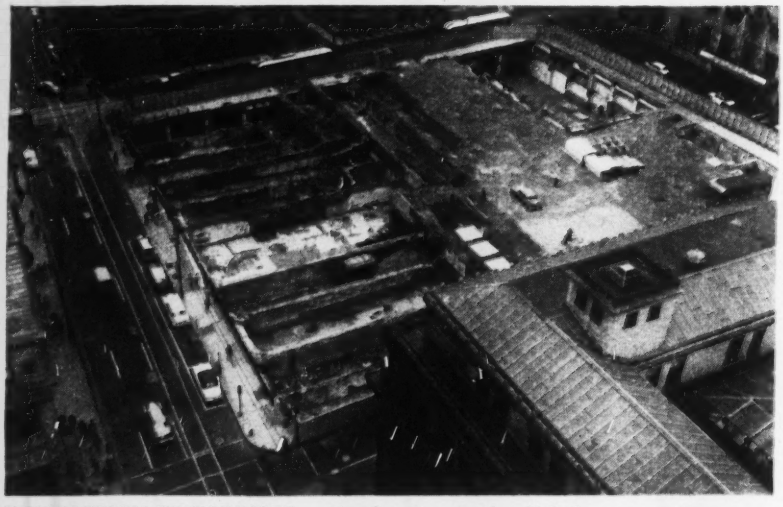


A LANDSCAPED GARDEN hides six underground parking levels for 890 cars.



DEMOLITION PROGRESSES as the first step in the 60-ft-deep excavation.

Excavating presents tricky problem on park-topped underground garage

The din of construction has become so much of a part of daily living in Mellon Square, Pittsburgh, that this bustling section of one of the country's busiest cities is taking current activity in stride.

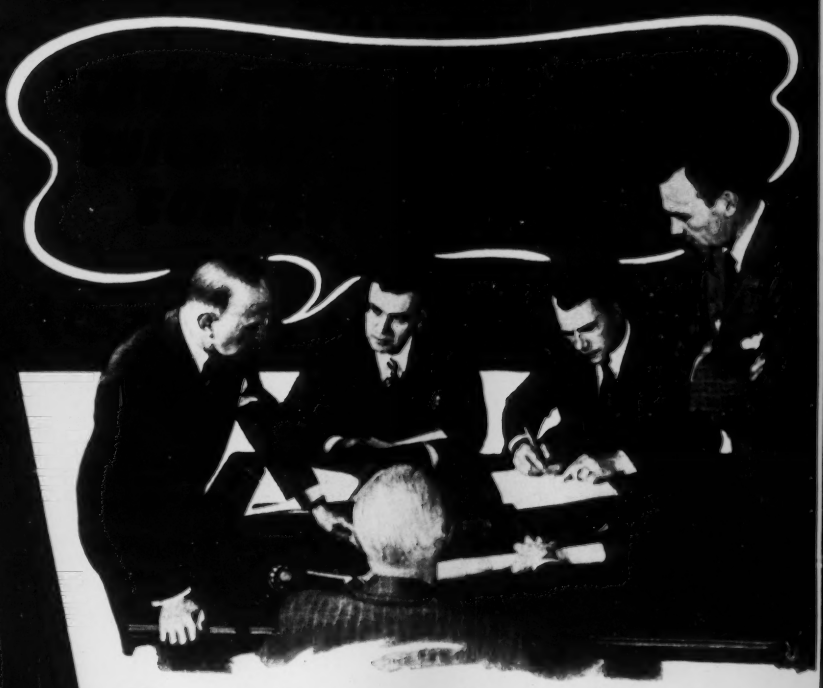
In the shadow of the city's newest giants (Alcoa's aluminum-clad office building (ENR Oct. 25, 1951, p. 29) and the Mellon-U. S. Steel Building) the newcomer is the $3.5-million Mellon Square underground garage.

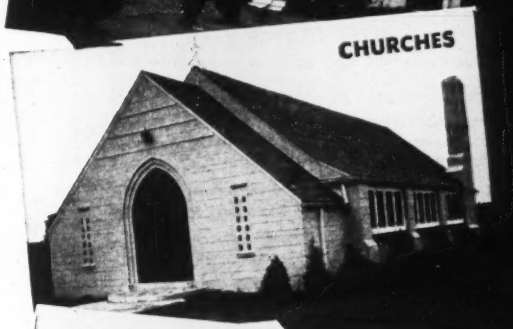
In its deepest portion, the 890-car structure will have six parking levels, all below street grade, and a landscaped park for a roof. The block-square, 230x260-ft garage will extend to a depth of 60 ft below the surface—one of the world's deepest subterranean garages—and will reach from curb to curb.

Although construction extends under the sidewalks bordering four of the city's busiest streets, nevertheless traffic will be uninterrupted while the work proceeds.

Design and construction of the project is being done by the H. K. Ferguson Co. of Cleveland which will operate it jointly with the Morrison-Knudsen Co., Inc., its associate, under lease from the Pittsburgh Public Parking Authority.

(*Continued on page 51*)

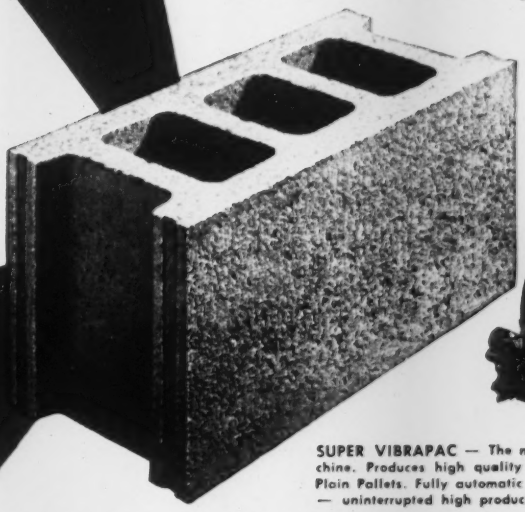




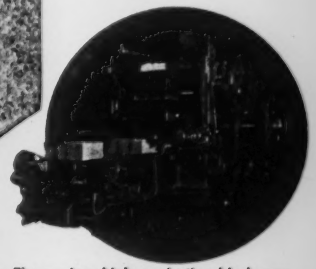
Today — leading architects and discriminating builders use Vibrapac Concrete Masonry for Beauty and Architectural Design. The cozy livability, both summer and winter, plus the economy, lifetime durability, fire safety, insulation value, and low upkeep cost of Vibrapac Concrete Masonry, makes it today's popular building material.

Besser has developed new units, such as floor filler block, pilaster block, window sill block, bond beam block, control joint block and many other accessory units, which have done much to increase the use of concrete masonry construction.

FREE BULLETIN — Soffit Block used as a filler for floors and roof construction has many advantages. Vibrapac plants report greatly increased demand for these units. The fire safety, economy and many other advantages of this type of floor and roof construction are explained in Bulletin No. 77. Write for your copy today.



VIBRAPAC BLOCK — Specified by Leading Architects — Used by Leading Contractors — Sold by Leading Concrete Products Plants



SUPER VIBRAPAC — The modern high production block machine. Produces high quality units in all styles and sizes on Plain Pallets. Fully automatic — no machine operator required — uninterrupted high production — Front Feeding of Pallets.

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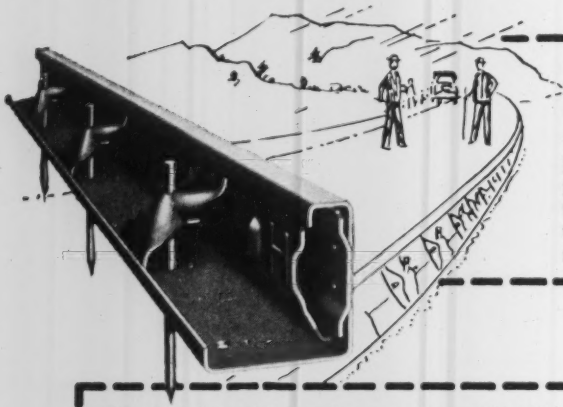
Complete Equipment for Concrete Products Plants

BESSER MANUFACTURING COMPANY • ALPENA, MICHIGAN, U. S. A.

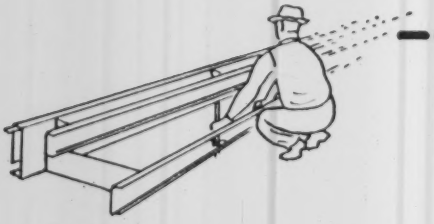
Here's How Leading Contractors Put an End to their Form Problems..

Here's the widest selection of steel forms available today. For more than 40 years, Heltzel has designed and built more types of forms than any other manufacturer. In fact, many form styles in general use today were developed by Heltzel engineers, who are constantly revising and improving their products to give you modern equipment that will do a better job faster.



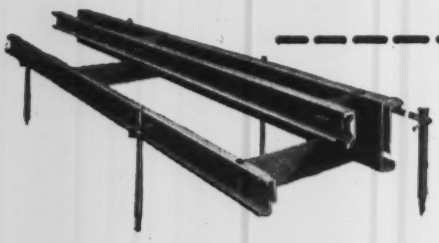
Here's why the Heltzel Highway Form is so popular: It's extremely easy to set and align — The flanged base means extra strength — All welded construction and "Special Analysis" prime carbon steel make it tougher — It has a positive lock that really supports and transfers the load — The extra wide tread gives greater traction — Helco stakes made from rerolled rail material are the toughest.

On airport construction the now famous **HELTZEL DUAL-DUTY** Form enables contractors to work two different slab thicknesses with a single set of forms — a real feature because runway and taxi strip or ramp areas can be poured without purchasing a second set of forms. The Heltzel Dual-Duty form is a sturdy, versatile form especially designed to give years of lowest cost service.



Heltzel Curb and Gutter Forms are the quickest-setting available — Light in weight, yet rigid in construction, they are made to required specifications. A single set of forms can be made adaptable to a variety of curb and gutter combinations. Flexible and rigid radius forms can be made to match.

Write today for further details. Ask for Bulletin L-20.



HELTZEL

STEEL FORMS

THE SELTZEL STEEL FORM AND IRON COMPANY, WARREN, OHIO

• **Curb to curb construction**—The depth of the structure and the fact that it extends to the curb line on all four sides necessitates the use of special excavating techniques. Borrowing the general method from foundation operations of the Mellon-U. S. Steel Building (Dec. 7, 1950, p. 40), the work will be accomplished in two stages.

During the excavation of the deep foundation for the Mellon building sheet pile caissons were placed for the foundation structures, bracing was installed as perimeter excavation was carried on, and the completed foundations were poured in the caissons prior to excavation of inside part of the building. The interior section was then excavated with cross-lot bracing installed as the work progressed.

• **Procedure reversed**—With the underground garage, the procedure has been reversed. Sheet piling will be driven at the curb line around the perimeter of the new structure, and excavation of the inner portion will be carried on leaving sufficient material to support the sheet piles and the street.

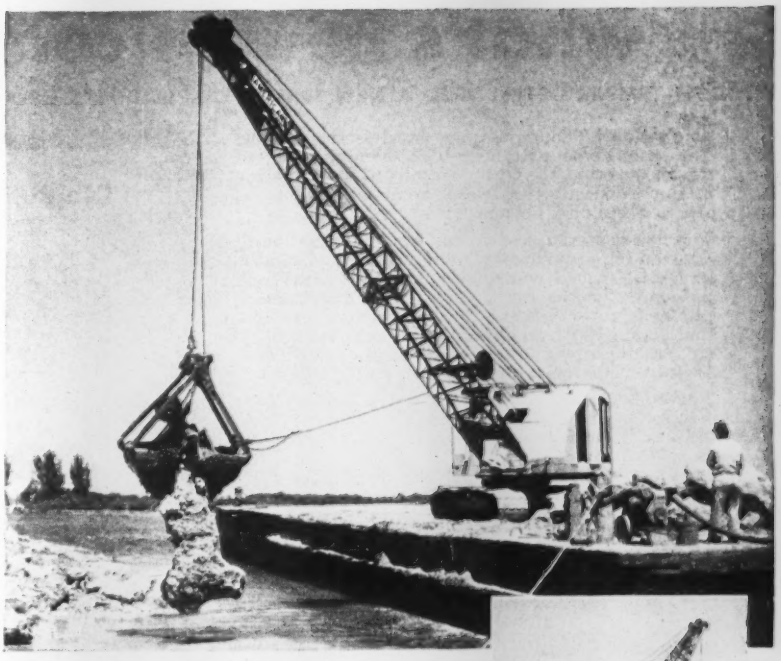
When the inner excavation (Stage 1) is complete, the frame of that part of the structure will be poured to form a rigid core. As excavation of the second stage at the periphery progresses, bracing will be installed against the rigid frame of the completed portion thus continuing the lateral support of the piles.

• **Result's the same**—When the second stage of excavation is finished, and the piling entirely braced back against the building, the construction of the remaining portion will start, and the pile bracing will be removed as the construction progresses upward.

Into the garage, of flat-slab concrete construction, will go a total of 15,000 cu yd of concrete for foundations, floors and walls. Clearing of the site will require excavation of about 90,000 cu yd of earth, 3,000 of this being rock. Six hundred tons of sheet piles sunk to a 60-ft depth at William Penn Place, and to 35 ft on Smithfield St. will be necessary. About 1,200 tons of reinforcing steel also will be used.

Ferguson began work in August with sheet piling scheduled for completion in November and the initial stage of excavation in December.

The roof-top park will have stores on Smithfield St. and will be constructed with three entrances and three exits to two other streets. To accommodate motorists, an elevator



Coral . . . from sea to seawall

A Florida contractor recently "took to sea" with an American 375 Crawler Crane to save an eroding waterfront. Ripraping, or building a retaining wall, was easy and safe with the American 375.

After crawling on the barge *and locking its tracks*, the American Crane picked up coral rock from the shore and loaded the barge. Without budging an inch, the Crane rode three miles down the bay to the waterfront site and unloaded the rock.

Many other instances have been noted in which the American 375 Crawler Crane has saved time, work and money on the job. When leading contractors need dependability, speed and economy in materials handling, they call on American products. Would you like to read about other interesting cases? Just mail the coupon below for future issues of the American Crosby Clipper magazine—at no cost to you!

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American Hoist & Derrick Company
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Yes, I'd like to get the American CROSBY CLIPPER.
Also, send information on the following equipment:
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Send coupon today!

what's new in construction?

"TOUGH-TEMPER" STEEL AND A NEW FAMILY OF PRODUCTS HELP DESIGNERS AND INVESTORS, ALIKE

Here's How: "Tough-temper" steel is the answer. Yes, a steel with extremely high strength is one of the reasons that the Granco family of four building products does a better job for architects, engineers, and new building owners.

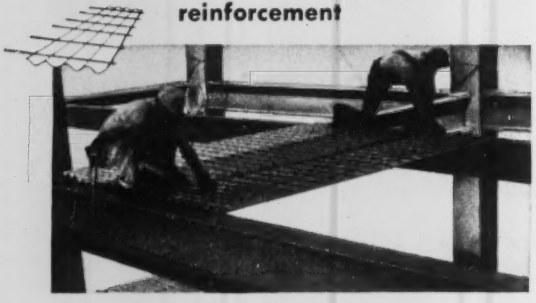
The new material, known as "tough-temper" steel does not require critical alloying to gain high-tensile strength. Instead, controlled cold-rolling with strain hardening as the result, gives high and unusual physical properties. The finished product, containing this steel with an ultimate strength over 100,000 psi, results in simplified, economical construction, savings in material and labor.

For additional information, write Department ER-2, Granco Steel Products Co., Granite City, Illinois. Your request will receive prompt attention.

CORRUFORM—light weight, permanent corrugated steel form

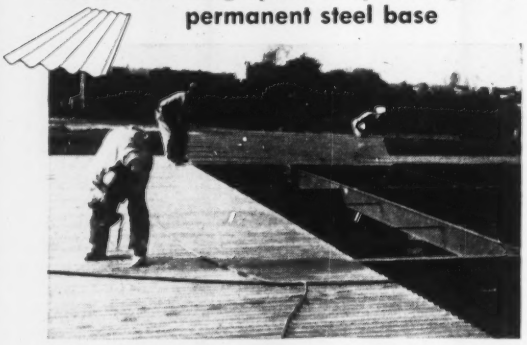
for concrete floors and roofs . . . stronger by far than conventional corrugated steel of same shape and weight . . . functions as a base for thin concrete slabs in steel joist floors and roofs . . . thinner, stronger slabs mean construction economy . . . concrete saving through lack of sag or leakage . . . speed and ease of placing Corruform also adds economy.

COFAR—combined form and reinforcement



Deep-corrugated steel, 100,000 psi and stronger (main reinforcement), and T-wires (temperature reinforcement) in one manufactured product . . . serves as both permanent form and reinforcement . . . completely eliminates wood forms . . . provides all the positive steel needed in the structural concrete slab . . . saves months in new construction.

TUFCOR—long span, deep corrugated, permanent steel base



for light-weight insulating concrete roofs for spans up to 7 feet . . . high strength steel and ideal corrugation pattern give outstanding stiffness . . . "tough-temper" steel assures load-supporting capacity and safety beyond conventional limitations . . . ideal for roof and wall panels with wide purlin and girt spacings . . . exceptionally suited for welding.

FLAT TOP ROOF DECK—rotary press formed

to insure uniform pattern. Wide cover width reduces handling and erection costs . . . fewer side laps cut welding time and offer greater support for concentrated loads. Ideal relationship between rib and flat provides maximum strength and cover per pound of steel. The characteristic pattern of Roof Deck precludes the use of "tough-temper" steel in forming but is manufactured from high-grade cold-rolled sheet steel. 35 sq. ft. covered per sheet placed.

GRANCO

STEEL PRODUCTS CO.

(Subsidiary of Granite City Steel Co.)

GRANITE CITY, ILLINOIS

and escalators between the first sublevel and the fourth sublevel will be installed. Underground passages to the Mellon-U. S. Steel and Alcoa Buildings, and possibly other structures may be included in the plans.

The park will have a large fountain in the center of a hard-surfaced plaza and will be surrounded on all sides by trees, shrubbery, flowers and benches.

The Mellon family of Pittsburgh made the project financially possible. The land cost $4 million.

HHFA requirements block fund appropriations

On account of oversight, misinterpretation or ignorance of new language written into the act providing funds for urban redevelopment by the recent Congress, two cities have had appropriations delayed.

In both cases the cities neglected to include proof that slum buildings in question could not be rehabilitated.

Before the Federal Housing and Home Financing Agency can release the funds it must be in receipt of two documents heretofore unnecessary.

Under the supplemented act two new documents are required by the HHFA. One is proof that it has been enforcing health, sanitation and safety laws without curing the slum condition; and the other is a resolution by the affected city's council stating that the area couldn't be saved by rehabilitating the existing buildings.

New zoning criteria studied

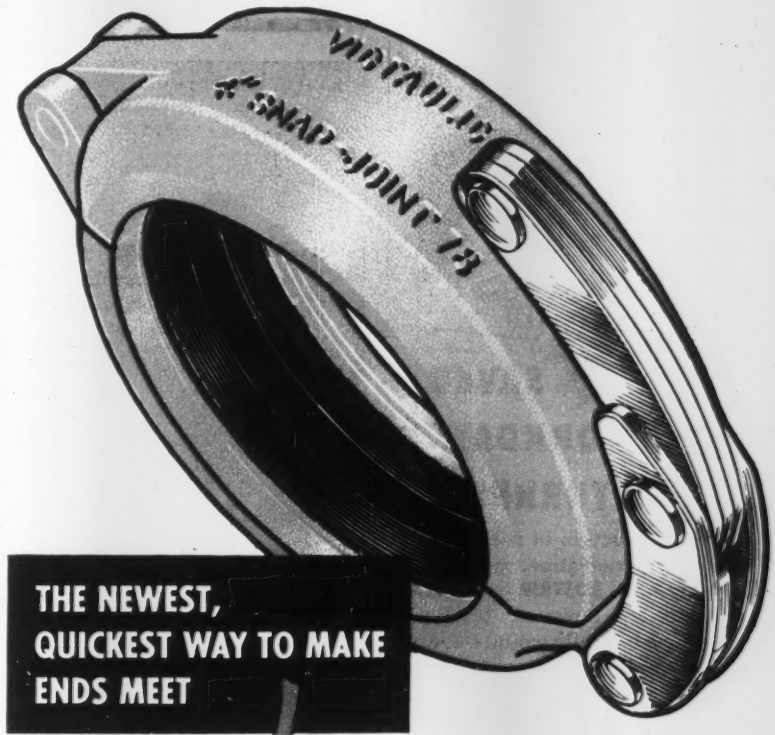
A new approach for the city to the problem of industrial zoning—putting emphasis on public nuisance, rather than building type or use—is being undertaken in Chicago.

First sections of a proposed new zoning code based on performance standards would classify industries according to air pollution, noise, fire hazard, traffic and even psychological and social factors.

To aid in establishment of these standards, the city plan commission enlisted the help of Armour Research Foundation of Illinois Institute of Technology, which has spent $10,000 in studying standards for possible use in the ordinance.

Sections of the code thus far proposed cover eight types of residential districts, a "residential parking" district (essentially parking lots adjacent to large apartment buildings and for the use of residents there), six types of business districts, and three of manufacturing.

(*Municipal continued on page 54*)



THE NEWEST, QUICKEST WAY TO MAKE ENDS MEET

the job's a snap...with a snap-joint

Here's the newest development in Mechanical Pipe Couplings—the Victaulic Snap-Joint *boltless toggle* pipe coupling.

The Snap-Joint extends the Victaulic Method into usages where speed and frequent dis-assembly and re-assembly are controlling factors. Snap-Joints assemble over the pipe ends in a matter of seconds with a speedy hand-lock . . . no wrenches required.

Snap-Joints, made to supplement Victaulic's famous line of bolted couplings, are ideal for temporary lines, valve, meter and pump connections and similar uses . . . their strength and durability make them completely reliable for permanent installations.

Snap-Joints fit Victaulic grooved pipe and the complete line of Victaulic Pipe Fittings . . . Ells, Tees, Reducers, Caps, etc. Every joint serves as a pipe union.

New Victaulic Snap-Joints are ready for your next job through all Victaulic Stocking Supply Houses. Available in pipe sizes: 1", 1¼", 2", 3" and 4". They are part of the world famous *complete* Victaulic Method of Piping.

Write today for Victaulic Snap-Joint Catalog No. 44-8D

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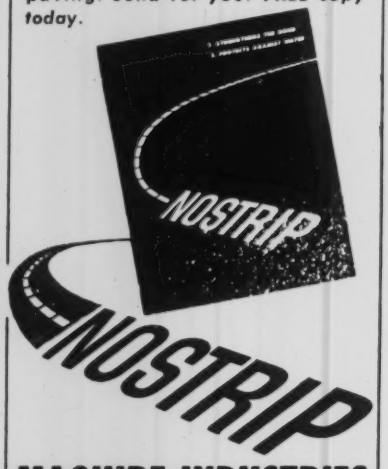
During construction of the N. J. Turnpike, penetration courses were shot with **NOSTRIP**-treated asphalt under moisture conditions which normally would have halted the job.

NOSTRIP *offers important advantages*
in all road applications of asphalt – surface treatment, mixed-in-place (mulch), penetration macadam, etc.

How* NOSTRIP *can work for you
is explained in a comprehensive new brochure covering the use of NOSTRIP in all types of bituminous paving. *Send for your* FREE *copy today.*



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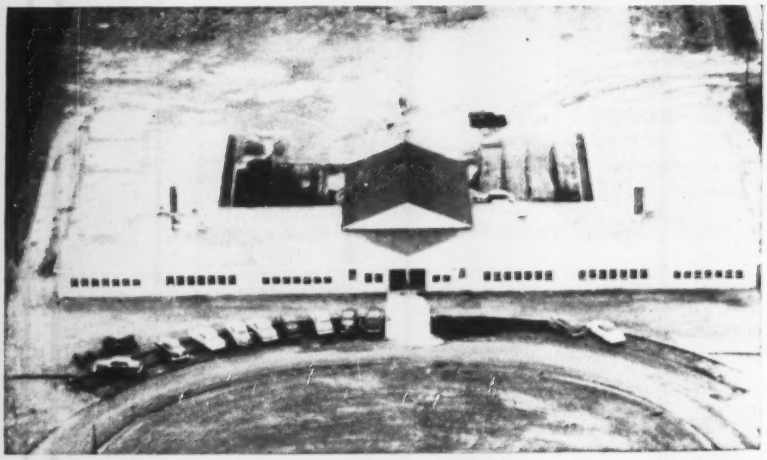
DISTRIBUTORS EVERYWHERE

Photos by Fitz

SEPT. 2ND—15 days after clearance of title—fill placed, underground services in, footings and foundations poured and the slab laid ready for the building.



SEPT. 26TH—Building accepted as substantially complete and ready for pupils.

Contractors submit school designs—Quick construction is the result

Out of the H-bomb area in South Carolina has come the story of an 18-classroom, temporary, demountable prefabricated school built in 39 working days. This period spans the construction time from bare ground to the building's official acceptance by the authorities as substantially complete.

Prefabrication is part of the answer, but several departures from conventional methods of design and construction are credited with a major share of the success of the program.

• **Speed needed**—Families of temporary workers for the bomb project already were moving into the Aiken, S. C.-Augusta, Ga., areas even before construction of facilities to house them could be considered. The need for new temporary-type schools was critical, and the possibility of building the usual permanent structures obviously was slim.

The Atomic Energy Commission, faced with an immediate need for 16 new educational buildings, called in the U. S. Office of Education (Federal

When you need maps for any large scale engineering project...

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The skills of our flight staff, field surveyors and photogrammetrists are combined with the latest and best equipment. We deliver maps you can depend on. Call on our broad experience to aid your project.

The topographic map and relief model shown here were made for the Iron Ore Company of Canada for its important Ruth Lake-Fleming development.

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helps New York City park
a lot of traffic problems
at Flushing Meadow

The vast Flushing Meadow Parking Lot in Queens, New York, gets efficient, safe toll collection with Taller & Cooper prefabricated Booths.

Taller & Cooper prefabricated booths are playing an increasingly important role in America's plans to relieve her growing parking problems. At Flushing Meadow, and many other parking areas, throughout the country, Taller & Cooper self-contained booths are being used to assure the greatest collection speed and revenue protection.

The all steel construction of Taller & Cooper booths offers years of maintenance free operation, provides safe, comfortable working conditions. Prefabricated in the factory, they can be erected on your site in a matter of hours.

If you are planning a parking area, plant entrance, park, or any facility requiring a guard or collector . . . let TALLER & COOPER help you achieve the finest in efficient & economical prefabricated booths.

WRITE TODAY for design and construction details.

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Security Administration), and the Housing and Home Finance Agency as consultants.

• **Plenty of freedom**—One of the more startling innovations was the architectural procedure used. Local architects, employed by AEC, prepared site plans, a suggested floor plan and a set of minimum requirements for classrooms, kitchen equipment, lighting and heating and other facilities.

With only this material at hand, the contractor had to submit his estimate for the construction along with a completed set of working drawings.

This procedure would allow the contractor to draw on his experience in effecting economies wherever possible, and to follow the fabrication methods which had proved more efficient in his particular organization.

One bidder, The Dawson Engineering Co. of Charleston, S. C., worked out plans with its subcontractors, allowing them the same freedom in their planning. As a result, Dawson was low bidder on eight of the 16 projects, and ultimate results on completed projects demonstrated the soundness of the method.

The 39-day performance was recorded in the construction, last year, of the Sand Bar Ferry Road School on the outskirts of Augusta. The sudden development of two housing projects and a trailer camp rendered educational facilities hopelessly inadequate, and the county board of education screamed for assistance.

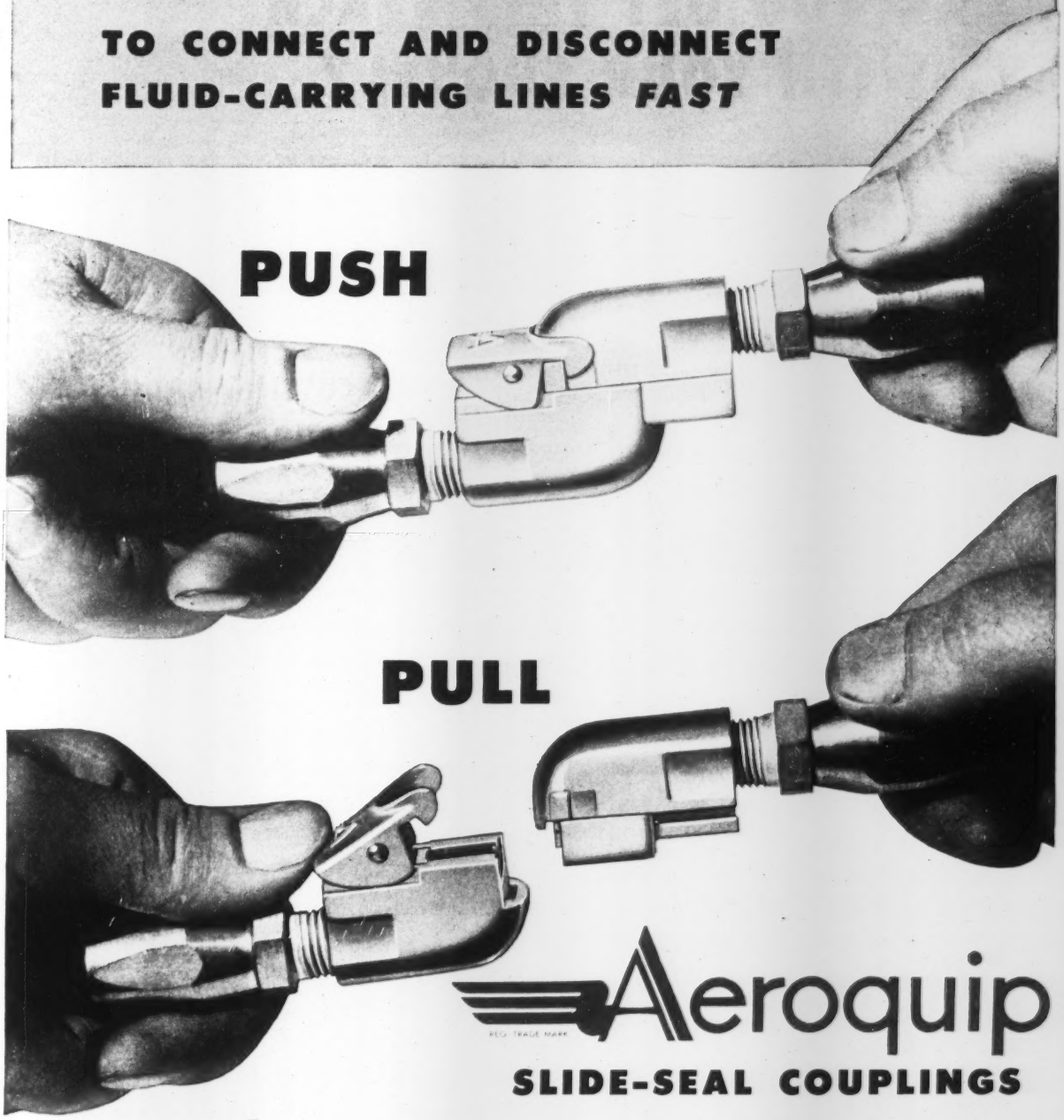
In two weeks' time, the contract was let for the 18-classroom school (26,837 sq ft) equipped with four complete toilet rooms, a large dispensary with private lavatory and shower, the office of the principal (with a separate room for his secretary), a multi-purpose room, teacher's rest room, library, kitchen and large storage rooms.

• **Complete structure**—Despite the temporary nature of the building, completeness was of primary concern. It is claimed that there is not a restaurant in the South with better kitchen facilities than are found in the Ferry Road School.

The two heating systems (100% salvagable) are forced-circulation hot water with convectors in all classrooms, halls and other rooms, and the systems in the kitchen and all-purpose room are independent thermostatically controlled units. Each classroom is equipped with an adjustment valve for regulation of the temperature to its particular requirement.

Lighting throughout the building

TO CONNECT AND DISCONNECT FLUID-CARRYING LINES *FAST*



Aeroquip

SLIDE-SEAL COUPLINGS

This Aeroquip development saves you time and money!

LOW COST . . . Aeroquip Slide-Seal Couplings connect and disconnect fluid-carrying lines instantly assuring full flow of fluids when connected, and perfect seal of each half when disconnected.

LIGHTWEIGHT AND COMPACT . . . They are ideal for use in confined areas and may be used to advantage in a wide variety of applications.

SIMPLE DESIGN . . . Only four working parts and two "O" rings assure positive performance and foolproof operation.

ADAPTABLE for use with many fluids including hydraulic fluids, hot oil, crude and fuel oils, anti-freeze solutions, gasoline, Diesel fuels, air, water, and other fluids.

Descriptive literature is available . . . please write.

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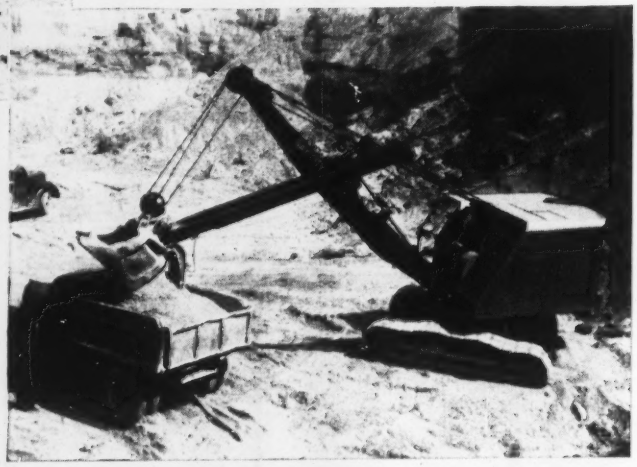
Model 30

28′-1″ CUTTING RADIUS
45° BOOM—¾ Yard
Model 45



Here we show two shovels—a half-yard above and a ¾ yard at right but both offering wide working ranges which invite comparison with any other shovel of the same capacity. These are two distinctly different models. The ¾ yard shovel is not a built-up machine from the ½ yard design. For instance the Model 45 has a unit-cast base with a 71″ diameter roller path whereas the Model 30 has a 56″ diameter roller path.

All the way from ground to boom-point the ¾ yard shovel is bigger, heavier and more powerful. However both shovels have tandem drums, one-piece continuous chain crowd, electric dipper trip, power booster clutches and many other heavy-duty design and construction features that mean bigger operating value. Why not get the full story on these convertible shovels today by writing for catalogs.

BAY CITY SHOVELS INC., BAY CITY, MICHIGAN

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write for your catalog

Get either or both these catalogs, packed with pictures of parts, assemblies and jobs. Ask for Catalog 2530 on the ½ yard and 3745 on the ¾ yard machine—no obligation.

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

is of latest design and fully in accord with requirements of the Georgia board of education. There is a fire alarm system and a bell system regulated by clock.

The building is of prefabricated frame construction with 85% of the material retrievable during demounting.

• **How it was done**—Fifteen days after land title had been cleared, two feet of earth fill had been placed, all underground plumbing had been installed, and the foundation and slab were ready for the erection of the building.

Erection began Sept. 2 and by the 4th, plasterboard side walls and tile wainscoting were being placed. The siding and painting progressed simultaneously, the painters covering an area as soon as the wallboard was in place.

On Sept. 6 the building was up and all partitions were in place. The exterior had received two coats of paint, all electrical wiring was finished and plumbing fixtures were being installed.

By the 12th the roofer had completed his contract, and on Sept. 26 the structure was accepted by the authorities as substantially complete and ready for use by pupils. While final acceptance was delayed (because of unavailability of several small items) until February, 1953, the school was formally opened by the Richmond County Board of Education on Oct. 6.

• **Detailed operations**—Louis Y. Dawson, Jr., an officer of the contracting firm explains that each operation was handled by a different crew.

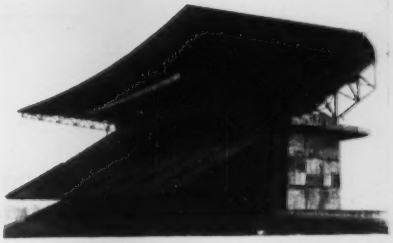
Says Dawson, "The first crew laid out the building, poured the concrete foundations and walls, handled the interior and exterior fill, poured concrete floors and did all exterior work."

"The second crew erected the building from the concrete floor to the roof. They came on the job just before the prefabricated sections arrived, and laid out and fastened treated plates to the concrete. They unloaded and stacked the sections, joists, and roof decking in the correct positions for erection, greatly adding to the speed of the jobs."

"A third crew installed the wallboard, taped the joints and installed the insulation. These men worked right behind the erection crew.

"The roofing crew normally was less than a half day behind the erection crew. The building, therefore, was dried in within 24 hours after the last piece of plywood decking was placed."

"The electrician worked with the



Left: How Wolmanized lumber is used for grandstand seats.
Above: The University of Washington's new Stadium addition.
Below: Metal fittings are not corroded by Wolmanized lumber.

Wolmanized* Pressure Treated Lumber Protects the Huskies' New Stadium

When the University of Washington, Seattle, built this striking new addition to its football stadium it added thousands of choice seats right on the 50-yard line. And to insure long service with minimum maintenance the Huskies' planners selected Wolmanized pressure-treated lumber as the material for those seats.

Besides giving lasting protection against rot and decay, Wolmanized pressure-treated lumber is clean and nonoily, does not damage the clothing of seat occupants. It is also odorless, completely paintable, and noncorrosive to metal fittings or structural members.

Since Wolman* preservative solutions are driven deep into the fibers of the wood by high pressures, and not just brushed on or soaked in, the protection afforded by Wolmanized lumber lasts many times longer. Wolmanized pressure-treated lumber is distributed nationwide, since Wolman* preservative treatment plants are located in all parts of the country. Learn how to get lasting rot and termite protection for your wooden structures. For full information write:

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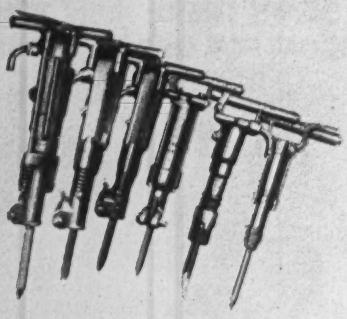

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2" x 12" Digging Chisels

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IT'S THE BREAKER that supplies the power, but it's the *tool* that delivers the *work!*

That's why all Ingersoll-Rand paving breaker steels and accessories are made to the most exacting specifications. Only tool steel of the proper analysis and physical characteristics is used. Advanced production methods and controls in heat treating and inspection assure the right combination of hardness and toughness in the finished product. All accessories are tempered, ready for immediate use.

This extra care and precision pays off in longer tool life. Many users report that I-R accessories have cut their replacement costs in half!

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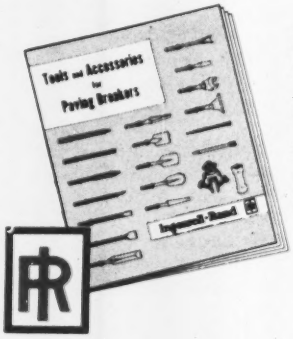

Here, in one 16-page volume, you'll find complete data on all tools and accessories for use with all Ingersoll-Rand paving breakers. Ask your I-R representative for a copy — or write to Ingersoll-Rand, 11 Broadway, New York 4, N. Y.

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erection crew, boring the ceiling joists on the ground before they were erected, and the wiring kept even with the erection of the building."

"Fastening of all plates under the stud partitions was accomplished by using cartridge injection with 2¼" stud bolts. The studs were spaced 24 in. o.c. Holes for countersinking the stud bolts were drilled in the treated plate before it was down. The stud was shot through a steel washer, through the plate and into the concrete."

"We believe," says Dawson, "that the Sand Bar Ferry Road School probably was built more rapidly than any other school that has been erected in this state especially when you consider that the contractor had to furnish complete mechanical layout for the plumbing, heating, electrical wiring, sewage disposal, etc., and have complete architectural and mechanical drawings approved by the government architects before the work could be started."

Municipal briefs . . .

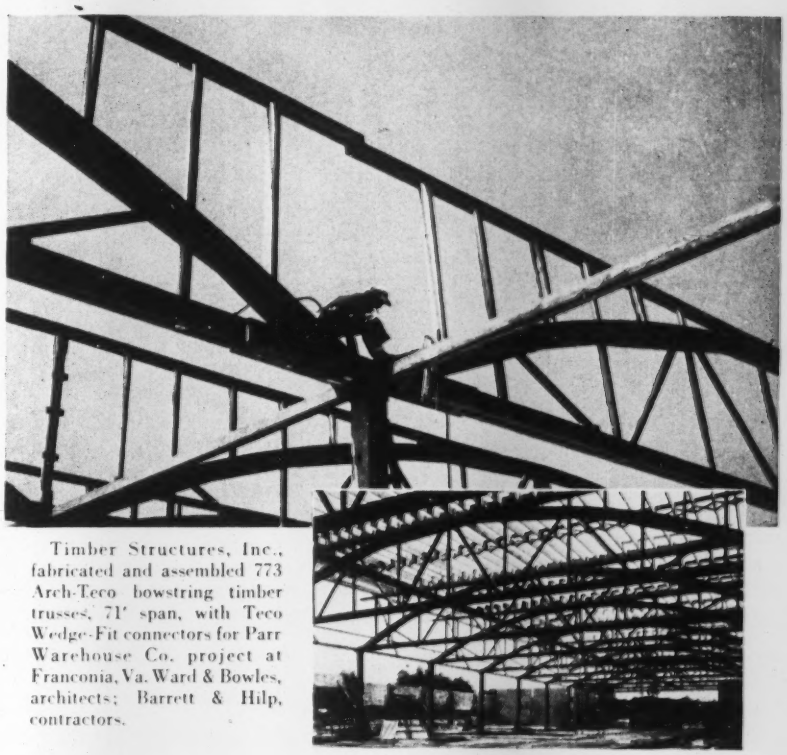
• **Garage squabble looms**—Downtown parking lot operators in Cleveland, Ohio, are expected to initiate litigation to prevent the city from proceeding with the proposed 1,500-car underground parking garage (ENR Aug. 6, p. 51) in the Mall.

• **Fluoridation for the big one?**—A resolution introduced in the New York City Council, recently, would direct the City Board of Water Supply and the Department of Water Supply, Gas and Electricity to investigate the cost and desirability of fluoridation of the city's water supply.

• **Midtown shopping center**—A $3.5-million shopping center is under construction at Sunnyvale, Calif., within two blocks of the heart of the shopping district. The unusual location gave rise to problems seldom associated with shopping centers—the need for demolition of existing structures and the channeling of heavy traffic.

• **One down—one to go**—The first contract for a $400,000-improvement of the Mount Airy, N. C., water system has been let. This $229,499 contract includes construction of a dam, a reservoir, pumping system, raw water basin and new filtering plant.

• **Four of a kind**—The fourth pipeline from the Cedar River to the city of Seattle, Wash., has been completed and is now under test.



Timber Structures, Inc., fabricated and assembled 773 Arch-Teco bowstring timber trusses, 71' span, with Teco Wedge-Fit connectors for Parr Warehouse Co. project at Franconia, Va. Ward & Bowles, architects; Barrett & Hilp, contractors.

Cost-conscious designers—
Specify Arch-Teco timber trusses for economy, availability and speed of construction.

The new government warehouse, sprawling over 28 acres in Virginia, is one of the nation's largest engineered timber structures. It is an outstanding example of the savings in time, material and money, made possible by the use of Teco connectors in fabricated timber construction.

Experienced fabricators, in all sections of the country, can supply prefabricated, ready-to-erect timber roof trusses for large or small structures. Names and addresses of these fabricators are listed in the FREE booklet, "Timber for Military, Commercial and Industrial Buildings"—send for your copy TODAY.

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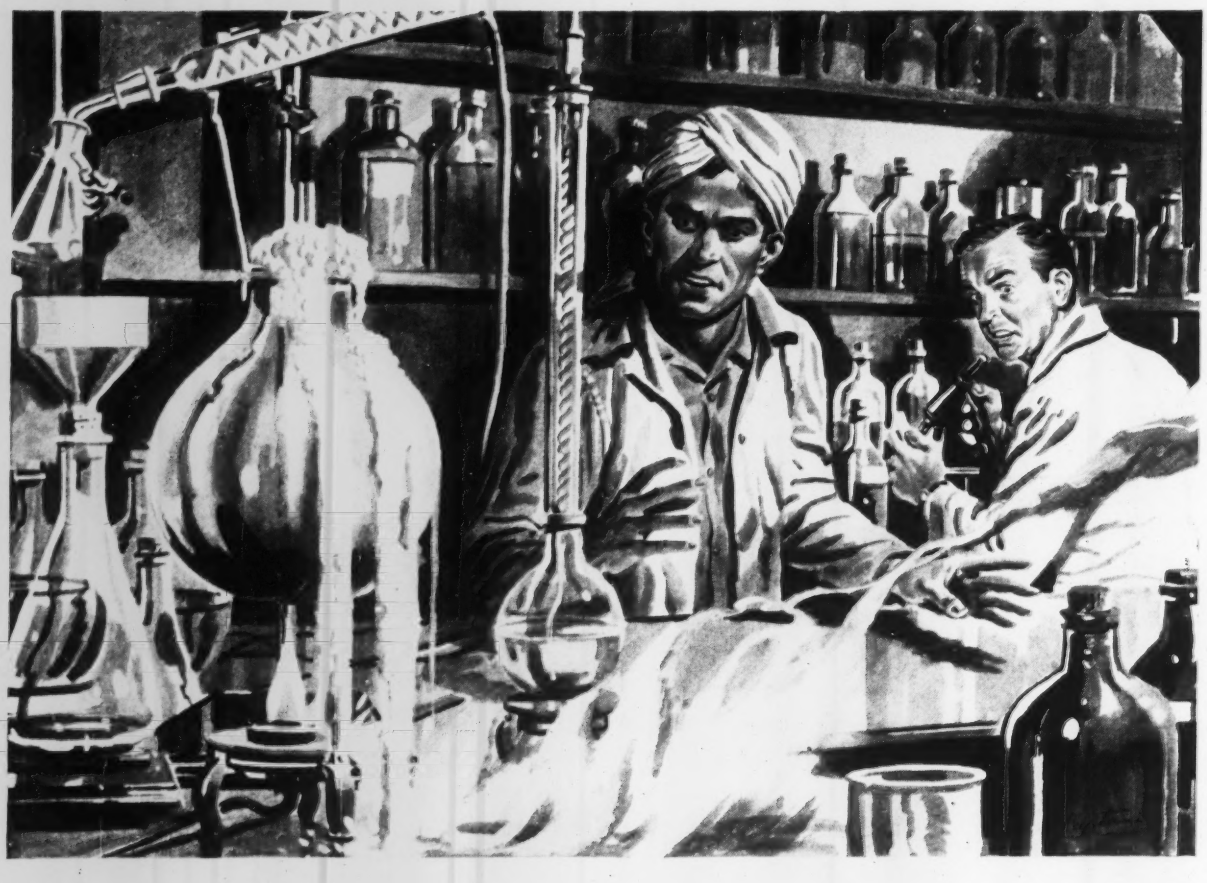

Trouble brewing on foreign soil... *Sound* Insurance protection is vital

In India, Sweden or Venezuela, chemicals sometimes become troublesome—human error creeps into the laboratories of American business. That is when *sound* insurance protection through the member companies of American Foreign Insurance Association can prevent serious financial loss from explosion, fire and liability.

For over three decades AFIA has been serving the foreign insurance needs of practically every type of American business. This experience gives AFIA knowledge of the numerous perils confronting each field of endeavor. What is equally important, it knows conditions abroad and keeps well informed on the laws, insurance regulations and requirements of foreign lands . . . for your protection.

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TWENTY-FOUR AMERICAN CAPITAL STOCK FIRE, MARINE AND CASUALTY INSURANCE COMPANIES PROVIDING INSURANCE PROTECTION IN FOREIGN LANDS

Prestressed span is double-decked for railway on top, coal conveyor below

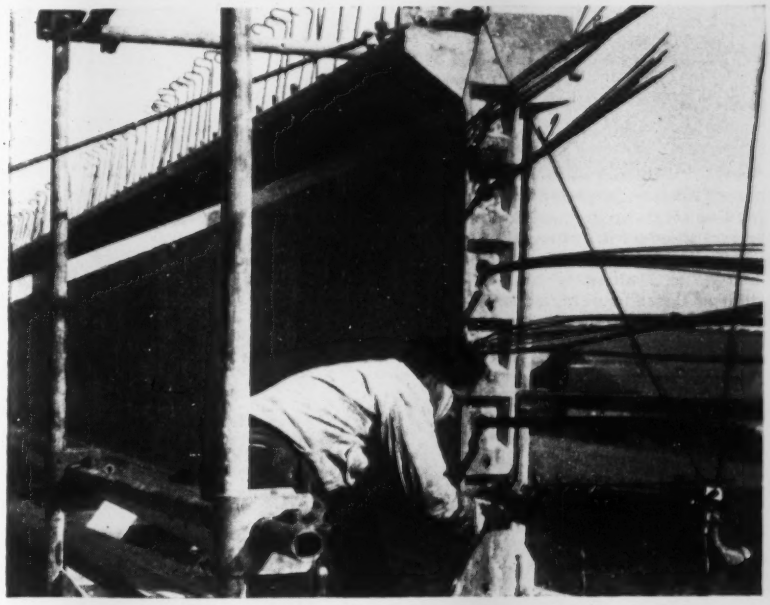
A prestressed concrete, 77-ft railway span recently completed at Calverton, England, carries a railway on its upper deck and a coal conveyor beneath on a lower slab. The bridge is a novel solution of the problem in the requirement that there could be only one span where both a railway and coal conveyor would cross a highway.

Headroom and gradient considerations further complicated the design. A clearance over the highway of 16 ft 6 in. was specified, and the railway level was limited by permissible gradients. Between the railway and the underside of the bridge a 5-ft clear height was necessary for the installation of a two-belt coal conveyor.

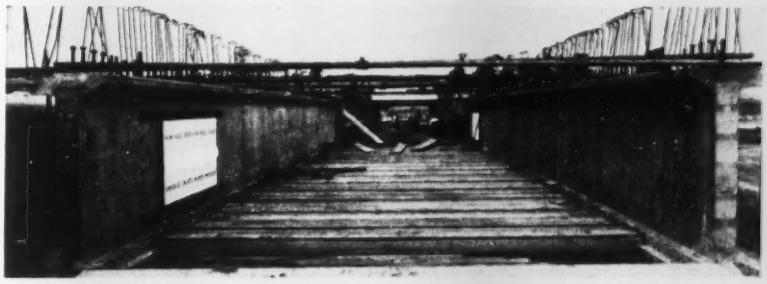
• **Two girders, two slabs**—As a consequence the bridge design called for two 5-ft 9-in. deep prestressed concrete girders on 16-ft 8-in. centers. A 9-in. prestressed railway slab rests on top of the girders, and the bottom, or conveyor, slab is supported on the lower flanges of the girder. The girders are 2 in. higher in elevation at the center of the span than at the ends, and the bottom of the conveyor floor is flush with the underside of the lower flange. At the span center, the girder web is 4 in. thick and widens to 7 in. at the ends. Live load design for the complete structure is 104 tons.

Precast in three sections each, the main girders were erected on timber falsework. The center section of each girder was long enough to allow the timber supports to span the highway beneath and permit the uninterrupted flow of traffic. When the girders were in place, six prestressing cables of twelve 0.2-in. dia each were threaded through metal duct tubes cast in the girder sections. Joints between sections were then dry-packed, and when they had set, the girders were post-tensioned. At both abutments the girders rest on hinge bearings.

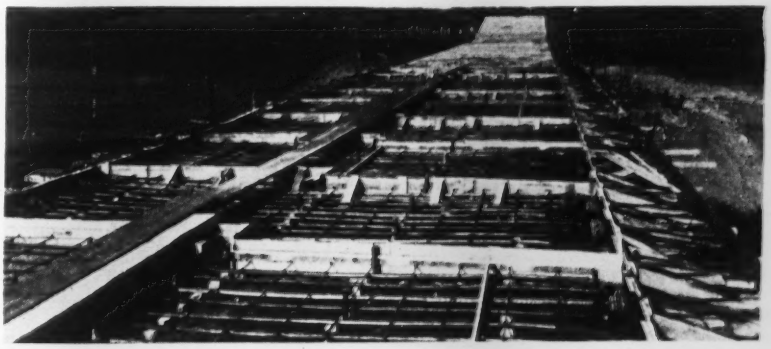
• **Lower deck**—Made up of precast hollow concrete beams, the 7-in. thick lower section of the conveyor floor incorporates precast channel sections on 4-ft 6-in. centers for placing trans-



BRIDGE GIRDERS WERE TENSIONED IN PLACE at Calverton, England, after precast sections of each 77-ft girder had been erected in falsework, prestressing cables run through metal duct tubes, and joints between sections had been dry-packed.

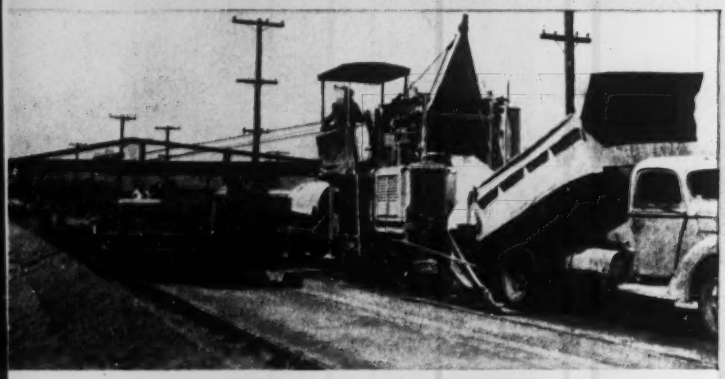


PRECAST HOLLOW FLOOR SECTIONS for conveyor deck were then laid on lower flanges of bridge girders. After transverse and longitudinal prestressing cables had been placed, on the lower deck and 2 in. of concrete placed over the assembly, post-tensioning made the bridge girders and lower slab a monolithic whole.

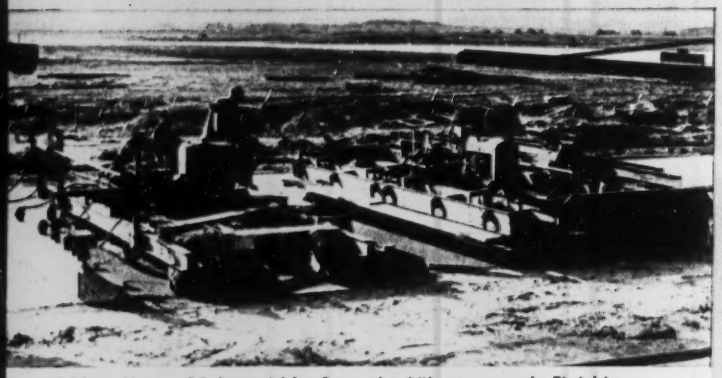


UPPER, RAILWAY DECK, cast in place, is hinge-supported on bridge girders. Each loop of transverse prestressing cable, sheathed in plastic, had both ends tensioned from same side of slab. Note female cones in place at ends of cable loops. At side of slab, main girder stirrups were bent out to lie as reinforcing in cantilevered footwalk.

Blaw-Knox Concrete Spreader and Finishing Machine apply assembly-line efficiency to a superhighway project in the East. Blaw-Knox Spreaders are standard equipment in most high-speed paving operations. They spread modern harsh, dry mixes of 1½" to 3" slump with speed and economy, assuring production of dense, durable concrete slab.



Blaw-Knox Spreader-Vibrator and Finishing Machine ride on Blaw-Knox Steel Forms on a California State Highway project. Note edge of completed slab adjacent to the lane being paved. Freedom from honeycomb is due to the compaction of the concrete with the vibratory attachment on the Spreader.



Blaw-Knox 25-ft. width Spreader-Vibrator and Finishing Machine speed work on a 12" concrete runway for an airport. The double-screed Finisher assures high daily production and a smooth finish regardless of the type of concrete used.

MORE CONTRACTORS ARE MAKING *MORE* MONEY ON *MORE* CONCRETE PAVING JOBS WITH THE

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YOU CAN HANDLE *ANY* CONCRETE PAVING JOB because every piece of equipment you need is contained in the "Complete Package". Use the entire set-up for the big jobs, or divide the units to meet the requirements of whatever job comes up . . . airports, roads, streets, or even dams and bridges. The Blaw-Knox "Complete Package" is tailor-made for *your* job, with exactly the units you need . . . Clamshell Buckets, Aggregate and Cement Batching Plants, Steel Paving Forms, Subgraders, Spreaders and Finishers. You can start with a "minimum package", add other units as you need them.

FASTER PRODUCTION is possible when all your equipment is in one "Complete Package". You get assembly-line efficiency and low cost operation in every step of the job. The entire project flows smoothly and swiftly because each "package" unit matches the others in size, capacity and operation. You get the most efficient sequence of operations without overtaxing some machines to keep up with the others.

LOWER MAINTENANCE COSTS . . . When all your equipment belongs to one family, you don't waste time running down the parts and service you need. Your nearest Blaw-Knox distributor knows "package" operation intimately and works closely with you to help you get the most from each unit in the package. One Blaw-Knox trained man can service all your equipment.

YOU GET ALL THESE ONE-SOURCE ADVANTAGES . . . Everything you need for concrete paving or concrete construction on *one* order, in *one* shipment, with *only one* financial contact, *one* distributor source for dependable service and genuine parts, and all your equipment backed by the undivided responsibility of *one* manufacturer. Contractors all over the country are swinging to the Blaw-Knox "Complete Package" paving system . . . ask your Blaw-Knox distributor for the "Complete Package" story.

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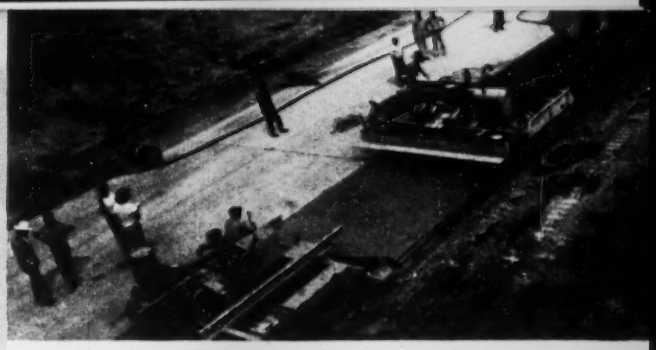
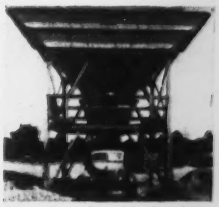
Blaw-Knox Precision Subgraders, like this one working on a Canadian Highway, are the only fine-grading machines which use vibration to make the exacting job of preparing the subgrade absolutely true to crown and cross section simple, fast and less costly.



Blaw-Knox "Package" equipment on an Expressway near Chicago. The Blaw-Knox Spreader with vibratory pan attachment was specified to secure satisfactory placing of the low slump, air-entrained concrete. A Blaw-Knox Finisher, riding on Blaw-Knox Steel Forms, follows the Spreader. Blaw-Knox Aggregate and Cement Batching Plants were used to insure accurate batching.

Blaw-Knox Self-Aligning Steel Paving Forms permit more rapid, lower cost form setting, always true to line and grade. The Steel Forms shown above carry the weight of the Blaw-Knox Spreader and Finisher in addition to the pressure of the concrete without distortion or misalignment. Special Heavy-Duty Steel Forms are available for airport work.



Blaw-Knox Portable Batching Plants are an integral part of the "Complete Package." Available in 2 and 3 compartment styles of 100 tons capacity, and in 4 compartments of 150 tons capacity.

Blaw-Knox Portable Bulk Cement Plant above has 400-bbls. elevated storage and 400-bbls. ground storage. Plant is equipped with a 1½-yd. electrically interlocked cement weighing batcher. Available in sizes and types for every need.

Blaw-Knox Clamshell Buckets are designed to speed production and cut material handling costs. Built in sizes ranging from 1/3-cu. yd. up, in weights to meet all operating conditions.

A Blaw-Knox "Complete Package" was used by many of the contractors with Penn Turnpike contracts. Shown above is a Spreader-Vibrator and Finishing Machine. Blaw-Knox Subgraders and Batching Plants were also used for the Penn Turnpike project.

MultiFoote 34-E Concrete Paver is a part of this "Complete Package" on the Penn Turnpike, paving 12′ pavement, 9″ thick, of 6″ base and 3″ top, at a rate of 1500′ per day. Ask your Blaw-Knox—Foote distributor for complete details about MultiFoote Pavers.

Engineering Research has built Safety and Economy into

CONCRETE PAVEMENTS

For a third of a century concrete pavements have been carrying a large proportion of the nation's ever-growing motor traffic and carrying it safely and at ***low annual cost.***

The outstanding performance of concrete pavements is the result of years of research and engineering analysis by federal, state, county and city engineers, colleges of engineering, technical societies and numerous other organizations. The Portland Cement Association is contributing to this highway technology through its continuing research and educational work.

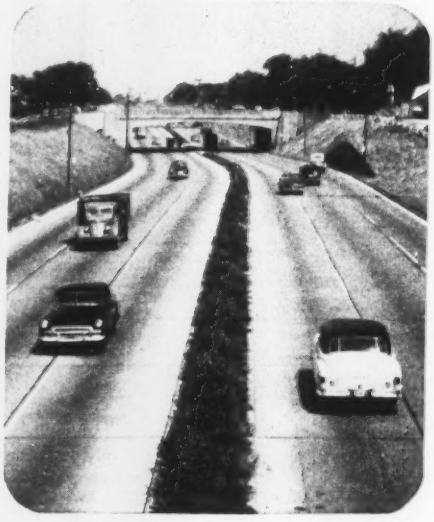
Today concrete pavements can be accurately designed for any anticipated weight or volume of traffic. They require far less maintenance to carry this traffic *safely.*

And they last much longer. In addition to the resulting ***low-annual-cost*** service, concrete has a skid-resistant, light-reflecting surface that makes it the *safest* pavement too.

Paving funds buy more service per dollar when invested in concrete for main roads and streets.

For more information get the free book, *"Concrete Pavement Design."* It is distributed only in the United States and Canada.

Detroit's Davison Expressway (below) is a depressed, limited access highway such as visualized by the engineers above.



PORTLAND CEMENT ASSOCIATION

Dept. A11a-17, 33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

verse prestressing cables sheathed in plastic. The hollow beams rest on the lower flange of the bridge girders, and the ¾-in. joint between beams was dry-packed. Longitudinal, sheathed prestressing cables, on 3-ft 4-in. centers, lie in a 2-in. layer of concrete poured over the hollow beams. After lower slab post-tensioning, the bridge girders and the lower deck act as a monolithic whole.

• **Simply supported upper deck**—Cast in place on top of the girders, the transversely prestressed upper, or railway, slab rests on hinge supports at both sides of the slab. These supports eliminate the transference of transverse bending moments, from trains on the slab, into the girders. Post-tensioning the transverse prestressing in this upper slab gave a slight upward camber to the deck when not under live load. This camber allows the upper deck to drain, thereby obviating the need for pitch on its upper side.

Reinforcing stirrups, cast in the girder sections and protruding from the top flange, were bent out to a horizontal position to serve as reinforcing for the cantilevered footwalks at either side of the bridge.

Prestressing was carried out with the Freyssinet system. At post-tensioning, concrete had a cube strength of 4,000 psi, and before the bridge was put in use the design called for a strength of 6,000 psi.

The bridge was designed by H. C. Griffiths in collaboration with The Pre-Stressed Concrete Co. Ltd., of London. General contractors were Fletcher and Co. Ltd. and Matthews & Mumby Ltd., both of Manchester, England.

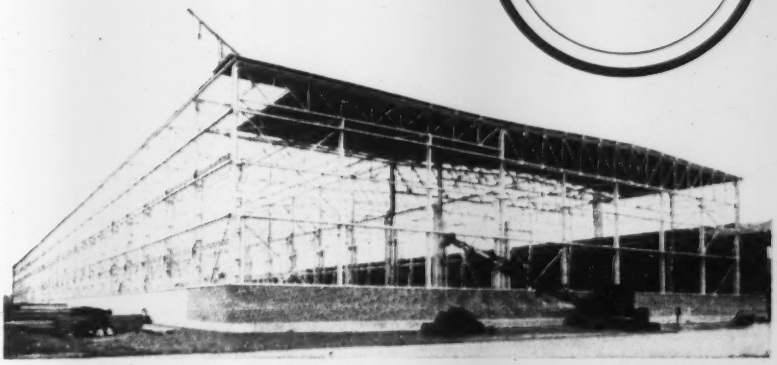
International briefs . . .

• **$40-million for Japan's power**—Three privately owned electric power facilities in Japan will be able to finance three thermal power stations by a $40-million loan recently authorized by the World Bank. To be equipped by Westinghouse International and General Electric International, the three power stations will help meet the high industrial demand for electric power in southern and central Japan.

• **$500-million plan for Mid-East**—A six-year plan to develop resources and relocate Arab refugees in the Middle East has been proposed to the United Nations by a group of prominent religious, educational, and civic leaders. Earmarked for the development of water, soil, oil, and chemical re-

CONSTRUCTION SCHEDULE:

RUSH



Getting steel on the job to get this framework up on schedule took a lot of doing. Meeting a 60-day delivery deadline would be tough enough any time. Meeting it at a time of critical steel shortage posed a king-sized problem. But teamwork resulted in a job-speeding solution . . . and with no premium on construction costs.

International engineers worked with the general contractors, shared their experience to expedite completion—helped to design the building around available steel. International's large stocks yielded the 1,000-odd tons of steel required to start this project rolling. This joint effort met the tight construction schedule. In fact, within eight weeks after date of the order the first structural shapes were on the way!

Steel framing for new plant of Shaw-Box Crane & Hoist Division of MANNING, MAXWELL & MOORE, INC., Muskegon, Michigan

CUNNINGHAM-LIMP, Detroit, Michigan: Contractors

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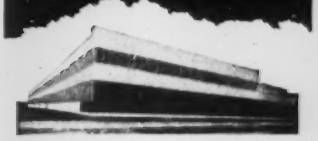

Only a completely coordinated organization could have satisfied the stringent requirements of the job described above. This same all-inclusive — and always interested — service is ready to work with you on any problem involving steel fabrication. Write today and tell us about your needs.

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It's so much Better with Permalite

Better in many ways! Weight, for instance

Concrete, using Permalite as the aggregate, may be designed from 20 to 50 lbs/cu/ft (as against the 150 lbs/cu/ft of ordinary concrete), with the highest strength-to-weight ratio of any lightweight aggregate concrete.

Plaster, with Permalite aggregate, weighs only ⅓ as much as ordinary sand plaster, providing the lightest, most economical material for gaining 2, 3 or 4 hour fire ratings in fireproofing structural steel beams, columns, etc.

But *light weight* isn't all! Permalite also gives you, in both concrete and plaster, much higher *insulating* value, improved *fire-resistance* and greater *elasticity.*

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Easier for the *architect,* who gains design advantages with the high-strength-to-weight of Permalite concrete and plaster. Easier for the *owner,* who can save on structural steel costs. Easier for the *builder,* who saves handling time and costs. Easier for the *workman,* because Permalite's light weight and excellent workability make it easier for him to do the best work he knows how!

To get the full story on Permalite's many advantages, send today for your free bulletin on Permalite, the largest-selling perlite aggregate in the world. Write Great Lakes Carbon Corporation, Dpt. K-3411 – 612 So. Flower St., Los Angeles 17.

Dependable GREAT LAKES **Permalite**®

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Ambrium Perlite Company Cincinnati 17, Ohio	PROCESSED FROM PERMALITE AND ALEXITE ORES ONLY BY THESE EXCLUSIVE PERMALITE FRANCHISEES OF GREAT LAKES CARBON CORPORATION				Lake Zurich Concrete Products Co Lake Zurich (Chicago), Illinois
Perlite Products Corp Dallas, Texas	William J. McCormack Sand Co., Inc. New York, New York	Aerite Processing Corp. of Fla Vero Beach, Fla	MacArthur Company St. Paul 4, Minn.	Perma Rock Products, Inc. Baltimore 30, Maryland	The Whittemore Company Rochdale 37, Mass.
Dunmore Perlite Products Rapid City, South Dakota	Pennsylvania Perlite Corp. Allentown, Pennsylvania	New Jersey Perlite Corp. Newark, New Jersey	McClure & Erickson Corp. Los Angeles, California	West Indies Perlite Mfg. Co., Inc. Havana, Cuba	Virginia Perlite Corp. Hopewell, Virginia

"Gunite"

..... the sand-cement product of the "CEMENT GUN," for Concrete and Masonry Repairs, Pre-Stressed Tanks, Steel Encasement and for lining Reservoirs, Sewers and Tunnels.

CEMENT GUN COMPANY

"GUNITE" CONTRACTORS

CENTRAL OFFICES—ALLENTOWN, PENNA., U.S.A.

MANUFACTURERS OF THE "CEMENT GUN"

sources, the $500 million would be administered through a UN agency. Another $300 million would go for the resettlement of refugees in the Mid-East.

• **Turkey base proposed**—Contingent, in part, on the possible loss to western powers of the Suez Canal, an offering of site and facilities for a major allied military base has been made by Turkey. The Turks believe that air and naval bases already operating in southeastern Turkey could be enlarged and integrated to supply allied defense forces throughout the northern sections of the Middle East.

• **Brazil shale oil plant**—The National Petroleum Council of Brazil has signed a contract with Foster Wheeler Corp., New York, for the design and construction of a shale oil plant at Tremembe in Sao Paulo, Brazil.

• **Venezuelan dike**—A $7-million contract has been awarded to the French firm, Entreprises Campenon Bernard, over seven U. S. companies, for the construction of the east dike of the Maracaibo bar. The project is the latest in the $47-million program to make Lake Maracaibo navigable to oil tankers. Lake Maracaibo rests on one of the richest oil deposits in the world.

• **African water project**—Surveys should be completed this year for a major irrigation and flood storage project on the Shire River, which flows from the southern tip of Lake Nyasa down through the coastal plain of Mozambique. Creation of the Central African Federation has made possible the attention now being paid to the Shire, which alternately floods and then leaves in drought the farmlands in its valley. A series of dams and reservoirs on the Shire and its tributaries not only would control the river flow and make navigation possible at all seasons but would also permit year-round navigation of Lake Nyasa, now subject to wide variations in water level. Sites for hydro projects on the river have been examined and the success of a hydro program would establish industry in Nyasaland.

• **Turkish port**—A $13-million expansion and modernization project for the Black Sea port of Samsun has been awarded to one Turkish and two German firms by the Turkish Government. The German firms involved in the construction are Philipp Holzman of Frankfurt and Hochtief of Essen.

...PAYLOADER PAYS...

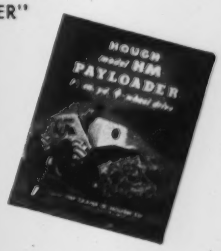
EVERYBODY concerned is pleased with the backfilling job John Rooff & Sons' "PAYLOADER" tractor-shovel is doing on this 12" water main installation. The contractor likes the 500 feet of daily progress being made . . . the water department knows it is getting a good solid backfill . . . the highway department is sure the "PAYLOADER" will not damage the pavement.

Dig! Load! Backfill! Stockpile! Lift! Carry! Strip! Push! Pull! The "PAYLOADER" does *all* these jobs. That is why it is one of the busiest machines on any project — and the most in demand. There are eight sizes of "PAYLOADERS," also a choice of four-wheel, rear-wheel or front-wheel drive to best fit your needs.

"PAYLOADER" Distributors — some 200-strong in the U. S. and Canada — are ready to serve you with their modern parts department and service shops manned by experienced personnel. From ANY angle, it will pay to buy a "PAYLOADER" tractor-shovel — a *complete* unit built by the tractor-shovel pioneer, The Frank G. Hough Co., 772 Sunnyside Avenue, Libertyville, Illinois.

A SIZE FOR ANY JOB

Full information on any "PAYLOADER" model is yours on request: Four-Wheel drive Models HM — 1½ yd. and HR — 1 yd.; Rear-wheel drive Models HY — 1¼ yd., HFH — 1⅛ yd., HF — ¾ yd., HE — ½ yd.; Front-wheel drive Models HAH — ½ cu. yd., HA — 12 cu. ft.



SAY "HUFF"

PAYLOADER®

IT'S **Sauerman...** for the latest word*... in **MODERN MATERIALS HANDLING!**

Upper left: 4-cu. yd. Crescent Scraper excavating from a river bottom, brings in a load of stone with very few fines for a western sand and gravel company.

Upper right: 2-cu. yd. Slackline Cableway spanning an average of 450 feet, lifts and conveys from an underwater deposit to a high hopper at the rate of 75 tph.

Lower left: 8-cu. yd. scraper machine is stockpiling 300 tons per hour, over an arc of 450 feet radius in a 225,000-sq. ft. storage area. Tail tower is remotely controlled from elevated cab above hopper.

Lower right: 2-cu. yd. Crescent, working between a fixed head point and movable tail tower, reclaims phosphate from all points about the periphery of a roughly semi-circular storage area.

Sauerman systems are providing efficient, economical materials handling at installations throughout the world. Over large or small areas . . . indoors or out . . . on special or routine jobs.

Let Sauerman's skilled engineering staff develop a system best suited to your particular requirements. Send today for pertinent field reports and general catalogs in your field of materials handling.

SAUERMAN BROS., INC.
532 S. Clinton St. Chicago 7, Ill.

ONE MAN MATERIALS HANDLING **SAUERMAN BROS., INC.**

NEW IDEAS

EXCAVATING UNDERWATER WITH TRACTOR
Cleaning under bridges, culverts, canals, with tractor-scraper. EFR 209

INCREASING DRAGLINE CAPACITY 50%
How to increase capacity of boom machines from 50 to 300%, and range up to 400 feet. EFR 219

RECLAIMING LAND WITHOUT DREDGES
Building up lake and sea shore property ready for landscaping at low cost without dredges. EFR 211

CLEANING PONDS AND RESERVOIRS
At long last—a simple, economical method of cleaning ponds without draining. EFR 213

CUTTING DOWN HIGH BANKS FROM TOP
High production method for excavating steep faces with no danger from slides. EFR 202

TWO NEW METHODS OF STRIP MINING
Removing overburden and pulling back into long stable slope all in one cycle. EFR 210, 203

DIGGING GRAVEL 65 FEET UNDERWATER
Taking gravel from pit 65 feet below water level, moving 500 feet to processing plant. EFR 214

ROBOT RECLAIMS FROM STORAGE PILES
This machine picks up, transports, and dumps automatically, alone and untended. EFR 225

DIGGING HARD-PACKED MATERIAL
Taking tightly-consolidated rock and gravel out of pit 85 ft below water. EFR 216

REVETTING BANKS FROM MIDSTREAM
Floating towers and dragline grade banks, construct levees at minimum cost. EFR 103

REQUEST BY NUMBER — SAUERMAN BROS., INC. 532 S. Clinton St., Chicago 7, Ill.

RESEARCH

Concrete hardening speeded by 60 per cent

A new process developed by two Michigan State College engineers is reported successful in speeding up by as much as 60 per cent the hardening and strengthening period of concrete.

The research was conducted by R. J. Claus and J. T. McCall, assistant professors of engineering at M.S.C. Results showed the acceleration takes place if a newly developed pellet-shaped form of calcium chloride is added to Portland cement concrete during mixing.

According to the two engineers, "The familiar flake form of calcium chloride has been used as a strength accelerator for about 50 years, but the new anhydrous pellet is a better accelerator since it results in increasing the strengthening process when compared with methods using the flake form."

The research project was begun in 1950 and was completed this year under the sponsorship of the Dow Chemical Co.

ASA publishes standards for heavy-duty flooring

Specifications for heavy-duty industrial flooring have been published by the American Standards Association.

The specifications provide for a floor of terrazo type that is hard, tough and durable. The aggregate is crushed granite, trap rock or similar hard stone chips and is not ground to such an extent as to produce a high polish.

The standard gives detailed requirements for materials used in mixing the aggregate, conditioning of the area to be covered, preparation of subfloors, method of application, thickness, sealing and the protection of the finished surface.

Also included in the specifications are methods of testing the consistency of the flooring material, linear change, flexural and compressive strength and method of gaging the flooring solution.

The project was sponsored by the American Society for Testing Materials and the National Bureau of Standards under the procedure of the American Standards Association.

Copies of the standard may be obtained from the American Standards Association, 70 E. 45th St., New York 17, N. Y. at $0.35 per copy.

OBITUARIES

Elmer F. Schmoll, 58, structural engineer for Pennsylvania Power & Light Co., died at Bethlehem, Pa., Oct. 15. He was a 1916 C. E. graduate of Lehigh University and joined the utility company in 1920. He had supervised the engineering on all strucures built on its property in the last 30 years. Before joining PP&L, he was transitman with Central Railroad of New Jersey, Allentown: designer with Des Moines Steel Co., Pittsburgh; draftsman with Guerber Engineering Co., Bethlehem; designer at the Dravo Contracting Co., Pittsburgh; chief of tank division, Pressed Steel Car Co., McKees Rocks; maintenance engineer, Bethlehem Shipbuilding Corp., Bethlehem.

Thomas J. Crowe, 51, president of the Martin P. Lincoln Co., general contractors, died Sept. 29 in Chicago. He was a member of the Building Construction Employers Association, the Builders' Association and the Chicago Builders chapter of the Associated General Contractors of America.

William H. Crawford, 70, an engineer for 12 years in the Philadelphia Water Department, died Oct. 1. Before going with the city, he was an engineer for the Philadelphia Suburban Water Co., for 26 years, and the Federal Water Service, New York.

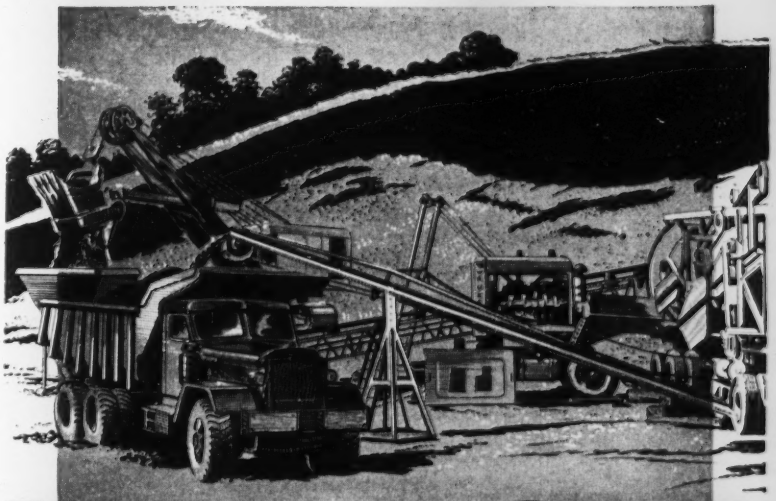
Charles M. Gillespie, 64, highway engineer, died at Tazewell, Va., Oct. 15.

Erastus Worthington, 89, who practised civil engineering at Dedham, Mass., for 65 years until retirement a few months ago, died at Boston Oct. 17. He had installed water and sewerage systems in many parts of the United States.

Charles Ray, 52, consulting engineer, died at Syracuse, N. Y., Oct. 15. A graduate engineer of Zurich Technology College in Switzerland, his native country, he came to the United States 29 years ago.

Hugh W. Skidmore, 63, of La Grange, Ill., president of the Chicago Paving Laboratory, died Oct. 19. He was past president of the American Institute of Asphalt Engineers.

Orlin R. Morse, 74, retired civil engineer, died at Fort Worth, Tex., Oct. 20. He studied at the University of Kansas and was with the Interstate Commerce Commission for six years. He then worked for western railroads until retirement in 1949.



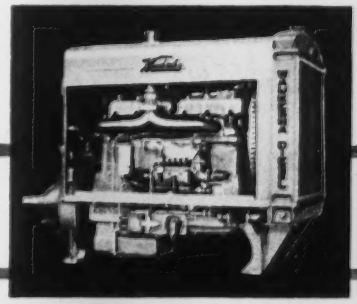
WAUKESHA

145 Series and 148 Series

POWER UNITS

145-GKU	779 cu. in.	Medium Speed, Gasoline (Standard Crankshaft)	167 max. hp
145-GKBU	779 cu. in.	High Speed, Gasoline (Counterbalanced Shaft)	178 max. hp
145-GZBU	817 cu. in.	High Speed, Gasoline (Counterbalanced Shaft)	185 max. hp
148-DKU	779 cu. in.	Normal Diesel (Standard Crankshaft)	165 max. hp
148-DKBU	779 cu. in.	Normal Diesel (Counterbalanced Shaft)	181 max. hp
148-DKBSU	779 cu. in.	Turbocharged Diesel (Counterbalanced Shaft)	250 max. hp

• Heavy duty! That's what the 145 and 148 Series power units are for . . . and what they do. Here's what they have—every detail built for rough and tumble service . . . crankcase-cylinder block is a deep, thick-wall casting . . . massive, drop-forged, 7-bearing hardened crankshaft . . . pressured oil to every internal bearing, gear and shaft . . . dual spring overhead valves . . . cam ground, heavy-duty pistons . . . full length water jacket, with removable liners . . . and other modern features—for clean burning, high economy, lively performance and long life. Send for Bulletins.



148-DKU DIESEL UNIT
6-cylinder, 5¼-inch x 6-inch, 779 cubic inches, 165 hp @ 1600 rpm with standard crankshaft.

224

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.
NEW YORK • TULSA • LOS ANGELES

no other grader offers you this

UNBEATABLE COMBINATION

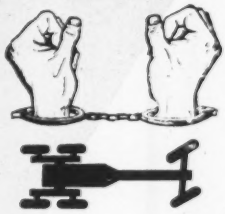
all-wheel drive
wakes up the front wheels

The front end of the ordinary motor grader is lazy, dead weight, contributing nothing to traction.

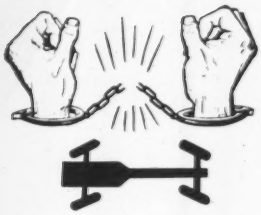
On the Austin-Western Power Grader, every pound rides on a driving wheel, contributing 100 per cent to traction.

all-wheel steer
frees the rear wheels

Non-steerable rear wheels slow-down all operations, make them more difficult.

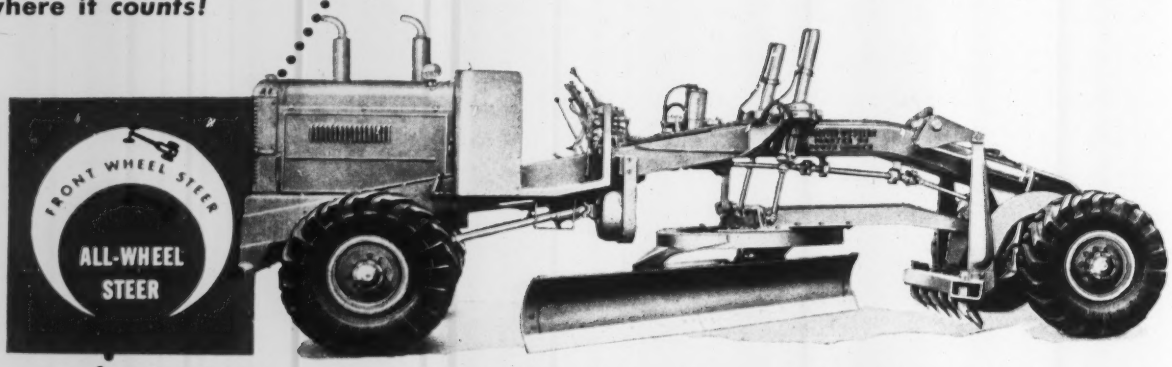


Steerable rear wheels speed up every job, make it easy to do things impossible for other graders.



Twice the maneuverability

30% more POWER at the blade—more power where it *counts!*



No wonder . . . Austin-Western "88-H," "99-H" and Master "99" Power Graders, with their finger-tip hydraulic control and unequaled stamina, plus exclusive All-Wheel Drive and All-Wheel Steer, outpull, outmaneuver and just naturally outperform all others.

Austin-Western

Power Graders • Motor Sweepers
Road Rollers • Hydraulic Cranes

BALDWIN LIMA HAMILTON BLH

Construction Equipment Division

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

BOOKS

Michigan Soils

FIELD MANUAL OF SOIL ENGINEERING—Third Edition. Michigan State Highway Dept., Contract-Estimate Engineer's Office, Lansing 13, Mich. $4.50

This 368-page pocket-size manual describes the practical application of soil engineering principles to the design, construction and maintenance of Michigan's highways. Much of the text has been modified or expanded to cover the development of new techniques in soil engineering.

Considerable emphasis is placed on providing practical information that should help the soil engineer in his daily work, as well as the contractor contemplating or executing a construction contract.

About one-half of the manual is devoted to text dealing with contemporary practices and recommended procedures in making soil surveys, design, construction and maintenance. One short chapter gives a brief glacial history of Michigan, and another deals with physical properties and tests of soils. The other half of the manual contains a glossary of nearly 250 soil terms, design recommendations, sample forms and charts used in field and laboratory work with soils, specifications for standard soil tests, and illustrated soil profiles.

Steel for buildings

STEELWORK IN BUILDINGS—By William Basil Scott. 203 pp. E. & F. N. Spon, London. Obtainable through the British Book Center, 122 E. 55th St., New York 22, N. Y. $5.50

This book interprets the "British Standard Specification on the Use of Structural Steel in Building" from the viewpoint of the designer. When emperical formulas are used, the basis on which they are founded is given as is comment on their limitations. In some instances, information is given as to procedures that may be considered "good practice" though they are not yet in the code.

A similar commentary on the code of the American Institute of Steel Construction would be useful to designers in this country.

The British code is printed in full in the book, with comment by the author following each section in which he gives the reasoning back of the various code requirements.

The author also gives tables showing the properties and safe load capacities of composite beams made of concrete floor 5 to 7 in. thick sup-

Better working conditions with COOLITE

General Contractor—
Joseph Bucheit & Sons, Youngstown, Ohio
Glazing—Pittsburgh Plate Glass Company, Youngstown, Ohio

Employes of the General Fireproofing Co., modern office furniture and fixtures manufacturer in Youngstown, Ohio, see better, feel better, work better in areas flooded with conditioned daylight. Eye comfort is an important factor in improved working conditions; so approximately 29,000 sq. ft. of Coolite, Heat Absorbing and Glare Reducing Glass were installed to provide copious quantities of natural illumination at low cost. For Coolite removes the harmful elements of "raw" sunlight...cuts glare that causes eye fatique and costly mistakes... absorbs up to 50% of solar heat to make interiors more comfortable.

Rolled, Figured and Wired glass by Mississippi is "visioneered" for better daylight illumination. Available in a wide variety of surface finishes all scientifically designed to distribute light to best advantage. In your building or remodeling projects specify Mississippi Glass.

Send for free catalog, "Coolite Heat Absorbing and Glare Reducing Glass."

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NEW YORK • CHICAGO • FULLERTON, CALIF.

WORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

Producers of untreated

LONG TIMBER

PILING

Species	Lengths
SOUTHERN PINE	50-100 Feet
MIXED OAK	50- 80 Feet
CYPRESS	50- 85 Feet
GUM & TUPELO	50- 80 Feet

SOUTHERN PILING COMPANY

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INDUSTRIAL BUILDINGS
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Huffman-Wolfe's 50 Years Of Mechanical Contracting "Know How" At Work . . .

— cutting "down time" down

From blueprint through completion of your mechanical contracting needs, The Huffman-Wolfe "team" integrates its work with your management people. The result is a minimum of "down time" and a job completed on time so that plant production is not appreciably delayed.

Our over half-century of experience working with the "blue chip" companies of American industry speaks for our ability to meet your most exacting requirements.

Our Service Covers All Phases Of Mechanical Contracting:

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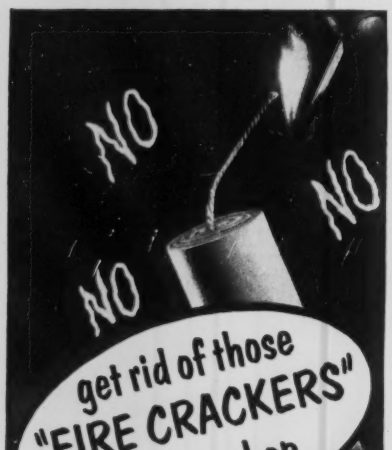
Serving the needs of industry since 1900



What fire crackers? We mean those welding and cutting torches that keep popping—back-firing—burning out valve seats. Did you know that the ingenious new Smith "FLO-TROL" prevents reverse flow of acetylene—protects torch against backfire and burned out seats?

Write us a card . . . NOW!

SMITH WELDING EQUIPMENT CORPORATION
Dept. ENR-81, 2633 S.E. 4th St., Minneapolis, Minn.

This FREE Bulletin Gives Valuable Data on Water Filtration . . .

Many problems in the reclamation or recycling of water in industrial processing, in the prevention of pollution in waste disposal and in the purification of potable supply are answered in DICALITE'S BULLETIN B-12-W—"Clarification of Water by Filtration."

**Write for your free copy*

DICALITE DIVISION • Great Lakes Carbon Corporation, Dept. EN, 612 S. Flower St., Los Angeles 17, Calif.

BOOKS

ported on 10 to 14-in. steel I beams. The top flanges of these beams are encased in the floor. In some instances, a steel plate is used to reinforce the bottom flange.

The code includes an excellent appendix which has 15 illustrations showing the effective column length to use with different arrangements of beams and girders framing into columns and with different types of connection to the column base.—*Reviewed by* ANTHONY HOADLEY and CLINTON E. WILLIAMS, *respectively, professor and associate professor of civil engineering, Union College, Schenectady, N. Y.*

New engineering books

ENGINEERING STATISTICS AND QUALITY CONTROL—By Irving W. Burr. 442 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $7.00.

PUMPS: Types, Selection, Installation, Operation, and Maintenance—Second Edition. By Frank A. Kristal and F. A. Annett. 373 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $6.50.

WELDABILITY OF STEELS—By Robert S. Stout and W. D'Orville Doty. 381 pp. Welding Research Council, 29 West 39th St., New York 18, N. Y. $6.50.

SUCCESSFUL LABOR RELATIONS FOR SMALL BUSINESS—By James Menzies Black and J. George Piccoli. 425 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $6.00.

TEXTBOOK OF THE MATERIALS OF ENGINEERING—Eighth Edition. By Herbert F. Moore and Mark B. Moore. 372 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $6.00.

ENGINEERING MECHANICS—By Linton E. Grinter. 408 pp. The Macmillan Co., 60 Fifth Ave., New York 11, N. Y. $5.75.

Reports and pamphlets

RAPID CONTROL TESTS FOR BITUMINOUS PAVING MIXTURES—Bulletin 175, Iowa Engineering Experiment Station, Ames, Iowa.

STOCKS OF STEEL FOR INDUSTRY—1953-4. Roster of the American Steel Warehouse Association, Inc., 442 Terminal Tower, Cleveland 13, Ohio.

THE TWENTY SIXTH ANNUAL HIGHWAY CONFERENCE OF THE UNIVERSITY OF COLORADO—Highway Series No. 26. Engineering Experiment Station, University of Colorado, Boulder, Colo.

PROCEEDINGS OF THE FOURTEENTH ANNUAL HIGHWAY ENGINEERING CONFERENCE—Bulletin No. 61 of the Utah Engineering Experiment Station, University of Utah, Salt Lake City, Utah.

SYMPOSIUM ON CONTINUOUS ANALYSIS OF INDUSTRIAL WATER AND INDUSTRIAL WASTE WATER—ASTM Special Technical Publication No. 130. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $1.50.

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
December Materials, and Labor Prices will appear in December 10, 1953 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C. L. lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots Gravel, 1½ in.	Gravel, ¾ in.	Sand	CRUSHED STONE Per ton, carload lots 1½ in.	¾ in.	CRUSHED SLAG Per ton, carload lots, f.o.b. plant 1½ in.	¾ in.	CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block Sand gravel	Lt. wgt. agg.	CONCRETE Ready Mixed 1:2:4, over 5 c.y., del
	Paper	Bulk	Mortar										
Atlanta	$3.87	$3.56	$3.40	$2.075	$2.075	$1.83	$2.20	$2.20	$1.87	$1.99	$0.21	$0.21	$12.06
Baltimore	3.90	3.60	3.53	2.50‡a	2.50‡a	2.00‡a	2.70‡a	2.80‡a	2.60‡a	2.55‡a	.17	.17a	11.45
Birmingham	3.26	2.66e	...	2.53a	2.53a	2.23a	2.64	2.64	1.25	1.45	.165	.165	11.00
Boston	4.16	3.84	3.96	2.50a	2.50a	2.50a	1.50a	1.60a	.....	.....	.215	.245a	12.00b
Chicago	3.48	3.17	....	3.25‡b	3.25‡b	3.65‡b	3.25‡b	3.25‡b	2.25‡	2.25‡	.24	.23b	11.70/11.94
Cincinnati	3.76	3.55	3.55	2.19‡c	2.24‡c	2.24‡c	2.54‡c	2.54‡c	.....	.....	.21	.225a	10.95
Cleveland	N.A. in C.L.	3.02e	...	2.05ef	1.85f	1.65	4.10a	4.10a	3.35‡	3.15‡	...	.22	14.40df
Dallas	3.15	2.85	2.90	2.18	2.28	1.84	2.22	2.38	.....	.....	.11e	.2675	9.40
Denver	4.04	3.74	4.04	1.80	2.00	1.20	.....	.....	.....	.....	.24	.255a	10.50
Detroit	3.77	3.50	3.57	4.25‡b	4.25‡b	3.75‡b	4.25‡	4.25‡	4.25‡	4.25‡	.21	.22a	12.00f
Kansas City	3.42	3.12	3.20	1.85‡	1.85‡	1.50‡a	2.00‡a	2.00‡a	.....	.....	.20avg	.215c	12.00b
Los Angeles	4.52a	4.00a	5.00	2.11a	2.31a	2.06a	2.06a	2.16a	.....	.....	.135/m	.237m	11.71/h
Minneapolis	3.95d	3.64d	3.56	2.55‡ag	2.55‡ag	1.50‡ag	2.75‡ag	2.75‡ag	.....	.....	.21ek	.....	12.75/e
Montreal	3.16ae	2.96ae	...	3.00	3.00	2.25	1.40aj	1.40aj	.....	.....	.20	.20a	11.10ae
New Orleans	3.35	3.02	3.18	2.32	2.32	1.82	....	....	1.05	1.25	.25	.....	12.90
New York	4.01	3.70	3.53	2.75bk	2.75bk	1.80bk	2.70bl	2.70bl	.....	.....	.....	.....	13.55an
Philadelphia	3.58/3.97‡	3.27/3.64‡	3.58/3.63‡	2.75‡ep	2.75‡ep	2.15‡ep	2.30‡	2.40‡	2.00	1.90	.22/.26	.....	12.50eo
Pittsburgh	3.47	3.19	3.47	2.25‡	2.25‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.22d	.22d	13.00
St. Louis	3.42/3.63b	2.99/3.25b	3.25/3.42	2.90am	2.90am	2.30/2.90am	1.70j	1.70j	1.50	1.50	.22	.28ei	11.40
San Francisco	3.56	3.16	...	1.92	1.92	2.02	2.02	2.02	.....	.....	...	.27el	11.25c
Seattle	4.65a	3.35a	5.80h	3.00‡bm	3.00‡bm	3.00‡bm	3.50‡bm	3.50‡bm	.....	.....	.25r	.3525r	11.40e

‡ Delivered. * Prices incl. dealers discount except as noted.
CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* CL price dealers discount not incl. *d* Dealers sell only LCL. *e* Truckload lots, destination price. *h* LCL.
SAND, GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ½". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson river. *m* Less 2% for cash. *n* F.o.b. cars. *o* 1–3 mi zone. *p* Add 10¢ for ea. add'l 3-mi zone.
CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete. *e* 5¼ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at pdc. *e* Less 2% for cash. *i* Less 1% for cash. *k* 8 x 8 x 18. *l* F.o.b. plant San Rafael. *m* F.o.b. yard.
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 2.5 cu. yds. or more. *e* 10–100 cu. brackets. *d* 1–3 mi. *z* acc. *e* 2,000 lb comp. *f* 2500 lb. comp. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Sales tax included. *l* 1:2½:4. *m* F.o.b. yard. *n* Plus escalator clause. *o* Add 15¢ for ea. add'l 1-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk
Richard City, Tenn.	$2.75†	Buffington, Ind.	$2.70†	Steelton, Minn.	$2.80†	Muskegon, Mich.	$2.85†	Toledo, O.	$2.75†
Clinchfield, Ga.	2.75†	Independence, Kan.	2.65†	Leeds, Ala.	2.60†	Saginaw, Mich.	2.75†	Milwaukee, Wis.	2.90†
Kingsport, Tenn.	2.75†	Hannibal, Mo.	2.70†	Duluth, Minn.	2.80†	Wyandotte, Mich.	2.75†	Green Bay, Wis.	2.90†
West Des Moines, Iowa	2.80†	Northampton, Pa.	2.75†	Hudson, N. Y.	2.75†	Buffalo, N. Y.	2.75†	Ironton, O.	2.75†
Nazareth, Pa.	2.75†	Universal, Pa.	2.80†	Alpena, Mich.	2.65†	Oswego, N. Y.	2.90†	Montreal City	2.66
Bath, Pa.	2.75†	Waco, Tex. (+ 10¢ tax)	2.60†	Detroit, Mich.	2.75†	Cleveland, O.	2.75†	W. Winfield, Pa.	2.80†

† *Prices to hold for fourth quarter of* 1953.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	PAVING ASPHALT Per ton, less than 80 penetration Tank car	Drums	ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration Tank car	Drums	CUTBACK ASPHALT Per ton Tank car	Drums	ROAD OIL Per gal. Tank car	ASPHALT EMULSION (Quick-breaking) Per gal. Tank car	Drums
Atlanta	$82.00	$81.00	$2.25	$26.00	$33.25	$0.215	$0.455	$0.0675e	$0.185e	$0.105	$0.115	$0.225
Baltimore	150.00‡	75.00‡	.....	22.00i	.....	.080i	0.15i	.03ee	.17ee	.09i	.09i	0.12i
Birmingham	.....	45.50i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50a	35.50a	22.00aee	35.50aee	.....	.....	.09a	.105a	.225a
Chicago	155.00‡	90.00‡b	3.60/3.65‡j	21.05b	31.05b	20.05bee	30.05bee	.0925bee	.1825bee	.0775b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	200.00	65.00bf	5.03ej	24.00k	.....	23.00k	.....	.1025kee	.....	.....	.11k	.18k
Dallas	e	40.00i	e	24.05	43.09	.1016	.2103	27.00i	47.87	.0080	.1014	.2128
Denver	.....	50.00i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	98.00	.....	27.21	.....	27.21e	.....	.1202ee	.....	.0925	.....	.2811
Kansas City	e	e	e	16.20el	.....	.06	.....	.07ee	.....	.06e	0.10	.....
Los Angles	e	.....	e	16.00dmx	.....	16.00dex	.....	18.00dle	.....	17.00dlo	.0825j	.1725j
Minneapolis	.....	.....	2.97h	22.00	.....	24.07	.....	.0744ee	.....	.08	.10	.....
Montreal	.....	e	e	27.10a	36.65a	.145a	.195a	16.30nea	18.80nea	.142a	.184na	.225na
New Orleans	...	.....	.....	17.50eo	....o	17.50eo	....o	.085eeo	....o	.0825#o	.085	.....
New York	.....	.....	2.93f	26.26q	47.59q	25.26el	46.58el	.1071ee	.2021ee	.1071	.1072	.1993
Philadelphia	175.00	110.00	4.06	22.00	.....	.....	.....	.095a	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	27.00	37.00	.10	.21	27.00	40.00	.095	.10	.22
St. Louis	.....	.....	.....	18.66jf	.....	.1758	.....	.084/.0865ee	.....	0.155	.10	.....
San Francisco	.....	55.00e	.....	17.50q	33.00qp	17.50jke	33.00jke	20.00q	37.50q	18.75e	.085q	.....
Seattle	.....	.....	.....	17.50h	38.00h	17.25ke	.....	20.00h	.....	19.75ke	.085kh	.095ke

‡ Delivered.
PAVING BRICK & BLOCK: *a* CL. *b* 3½ x 4 x 8½. *c* 2¾ x 8¼ x 4. *d* LCL, truck deliveries. *e* Not used. *f* 2" interior 6# treat. *g* 3" *h* 8" treat. *i* 3 x 3⅝ x 8½. *j* 2½". 6 tr
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segundo. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez. *i* F.o.b. refinery, Baltimore. *j* F.o.b. refinery, Inglewood, Calif. *k* 50–110 penetr. *l* Less than 100 penetr. *m* 40–80 penetr. *n* Tax incl. *o* Drums not avail. *p* Shipped in steel bbl. *q* 40–85 penetr. *r* In customer's drums. *s* Shipped in drums, per drum. *t* 85–300 penetr. *u* Per 100 gal. Per ton. *w* Per gal. *z* Also tank trucks *y* F.o.b. Oakland. *k* F.o.b. refinery, Cleveland. *e* F.o.b. Norco, La.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$4.10	$4.10	$4.15	$8.90	....	$86.50	$104.00	Not	$5.275	$7.05	$5.125	....
Chicago Area	4.10	4.10	4.15	8.90	$4.925	86.50	104.00	avail-	5.275	7.05	5.125	....
Pittsburgh Area	4.10	4.10	4.15	8.90	4.925	86.50	104.00	able	5.275	7.05	5.125	$11.00
Buffalo Area	4.10	4.10	4.15	8.90	4.925	86.50	104.00	....	5.275	7.05	5.125	11.00
Cleveland	....	....	4.15	8.90	4.925	.....	.....	....	....	....	....	11.00
Youngstown Area	....	....	4.15	....	....	.....	.....	....	....	7.05	....	....
Geneva	4.10	4.10	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	....	....	....	4.925	.....	.....	....	....	7.05	....	....
Pueblo	4.30	4.70	4.75	....	....	.....	95.00	....	5.275	7.05	5.125	11.00

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price u 5 tons to carload lot b New billet	Rail steel	Add switch	$/cwt for Del.	EXPANDED METAL LATH k Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING d Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$7.31	$7.11	$7.11	$.025	$...	$38.00‡	$42.00‡			
Baltimore	6.98	6.91f	....	....	....	42.00	45.00			
Birmingham	6.35	6.15	6.15	.05	.15	47.00p	52.00p			
Boston	7.06a	7.22	7.22	....	....	40.50	44.50			
Chicago	6.46	5.75ff	5.75ff	.0625	....	46.00C	51.00C			
Cincinnati	6.93ak	6.91r	....	....	.15	39.00azee	43.00azee			
Cleveland	6.99	5.61r	....	....	....	39.00‡	43.00‡			
Dallas	9.05	7.25	7.25	....	....	49.00	52.00			
Denver	7.95	7.30e	....	....	....	52.50a	64.50qs			
Detroit	6.93	7.04n	....	....	.30	50.50	54.50			
Kansas City	7.05nn	7.27	....	....	....	43.50	45.00			
Los Angeles	7.35fkk	6.85g	....	....	....	51.00	57.00			
Minneapolis	6.92kk	7.53ll	7.53ll	....	....	37.00	41.00			
Montreal	8.20iB/9.20	6.05i	6.05g	....	....	53.50k	58.50k			
New Orleans	....	5.98ok	....	.05	....	66.00	60.00			
New York	7.20	7.01	7.01	....	.30	38.50st	44.00st			
Philadelphia	6.42	6.67	....	....	....	38.00‡	42.00‡			
Pittsburgh	6.40	6.40	....	....	.10	37.60	39.60			
St. Louis	6.86a	6.30e	6.30e	....	....	55.00aa	56.00aa			
San Francisco	7.25	6.85l	....	....	....	40.50	43.50			
Seattle	4.85e	6.20al	....	....	....	51.00mm	57.00mm			

A.P.M.* Joliet, Illinois, Donora, Penn., $3.08
F.o.b. Mill: Monessen, Penn., $3.08

A.P.M.* Joliet, Illinois, Donora, Penn., $2.02
F.o.b. Mill: Monessen, Penn., $2.02

A.P.M.* Joliet, Illinois, Donora, Penn., $3.23
F.o.b. Mill: Monessen Penn., $3.23

* At Producing Mill.

‡ Delivered. b Less than 700# add 50¢; 700–1499# add 65¢; 1500 to 7999# add 50¢. c 20 tons or over base. d Mill price plus freight. e F.o.b. plant. f Includes delivered in free delivery zone. g 10,000 to 39,999 lbs. h List price. Dominion tax exempt. Provincial and Municipal tax extra. i Plus Dominion, Provincial and Municipal sales tax. k F.o.b. city. l Intermediate and hard grade, new billet. m Per sq. yd. n 5–10 tons. o 5 to 20 tons base. p Del. of 500 sq. yd. or more. q Std. ribbed, 4 lb. per sq. yd. r 5 tons or over. s LCL. t Asphalt coated. u Note: Revised size extra—1 in., 1¼ in., 1½ in., 30¢, 2 in., 2½ in., 45¢, 3 in., 55¢, 3½ in., 80¢, 4 in., $1.10, 4½ in., $2.20. v 20 tons. Straight. w Copper bearing. y $0.0093 transportation tax included z Copper alloy. aa Delivered truck to job. Contractor to do unloading. ee F.o.b. cars. ff Carload lots. gg Including sales. hh 10,000–19,999 lbs ll 5 to 8 tons, f.o.b. city. mm 2% off for cash. nn 1–5 tons. # 10 tons to CL. a 2000–9999 lbs. A. Amer. struct'l shapes. B. Canadian shapes. C. Deliv to contractor.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.a	ASBESTOS CEMENT PIPE per lin. ft., f.ob. city 6" Pr Cl. 150	12" Sew Cl. I	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	$101.00	$1.45	$2.42	$ .545	$1.27	$4.82	$12.925	$248.00	$356.00	$1.23	$2.62
Baltimore	121.50	1.45	2.42	.518	.999	4.095A	11.1725A	178.20	274.80	.95	2.60
Birmingham	103.00	1.45	2.42	.42	.75	2.99	....	250.00‡	375.00‡	1.25m	2.75m
Boston	122.00	1.47	2.20	.553usz	1.0665usy	4.41usy	11.90usy	187.80z	280.20z	1.62mq	3.95mq
Chicago	107.00	1.45	2.20	.70m	1.35m	5.62m	13.50m	150.00‡	270.00‡	.80	2.80
Cincinnati	108.00	1.47	2.29	.581y	1.120y	4.41y	11.375y	164.40	254.10	.80m	2.95m
Cleveland	108.00	1.47	2.29	.462x	.945x	3.60x	10.04x	158.00m	245.65m	.82m	3.10m
Dallas	112.00	1.47	2.54	.436	.822	3.234b	9.17b	.....	.....	.49	1.60
Denver	118.00	1.53	2.54	.45dd	.78dd	3.48dd	....	.....	.....	.74m	2.50m
Detroit	108.00	1.47	2.29	.95	1.80	6.95	18.25	240.00m	360.00m	.82	3.47
Kansas City	113.00	1.47	2.29	.53	.945	3.87	10.60	250.00	480.00	.80g	3.25g
Los Angeles	126.35	1.53	2.29	.62f	1.26f	5.21f	14.89f	228.20f	348.90f	.95	2.75ff
Minneapolis*	112.00	1.49	2.42	.72mo	1.32mo	5.32mo	....	.....	.....	1.38h	3.93h
Montreal	110.00	....	....	.85z	1.50z	5.25z	8.50e	.....	.....	1.17j	3.11j
New Orleans	101.50	1.45	2.42	.53	.965	5.13	....	300.00bb	500.00bb	.65	2.29
New York	111.35	1.47	2.20	.61	1.22	4.82	12.81	.....	.....	1.15	3.00
Philadelphia	110.00	1.45	2.20	.65	1.25	4.95A	12.65A	300.00‡	350.00‡	1.60h	3.95h
Pittsburgh	110.00	1.47	2.20	.428m	.794m	2.97m	7.92m	152.00	244.00	1.05h	2.50h
St. Louis	112.00	1.45	2.29	.56	1.03	4.22	9.80	180.00l	380.00l	1.20il	2.85il
San Francisco	127.00	1.53	2.29	.61d	1.20d	5.03d	12.57d	240.00l	400.00l	.73	3.02
Seattle	122.00	1.54	2.42	.51b	.91b	....	....	150.00e	.....	.77ee	2.30ee

‡ Delivered. a Class B & heavier. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually, $1 per ton less. b Extra strength ASTM C 200–44T. c 4-in., $90. d S8361-A. e 30-in. f F.o.b. factory. g Culvert pipe. Reinforced, ASTM C76–41. h Reinforced, ASTM C75–41. i Reinforced, ASTM C76–37. j Centrispun. No standard specifications in Can. l F.o.b. plant. m Truck delivery. o Listed price is based on LCL (no minimum). u ASTM C13–40. v C.L.f.o.b. origin, freight allowed. x 2 ft. lengths. y 3 ft. lengths. z CESA A 60–1941 specifications used. aa Extra strength ASTM C 200–50. A standard strength. *6", $1.67 per ft.; carlots, f.o.b. track Class 150. bb Freight allowed to destination in city. dd LCL delivered, f.o.b. truck. ee 2% off for cash. ff 21.

*WROUGHT STEEL PIPE—(Full standard weight)

Discount from list see footnote

Mill	Black %	Lap Weld‡ Galv. %	Butt Weld‡ Black %	Butt Weld‡ Galv. %
Lorain, Ohio	27.75a	11.00a	36.75	20.50
Aliquippa, Pa.	27.75a	11.00a	36.75	20.50
Sparrows Pt., Md.	22.75a	6.00	31.75	18.50
Benwood, W. Va.	26.50d	9.75d	36.75	20.50
Youngstown, O.	26.75b	10.00b	36.75	20.50
Indiana Harbor Ind.	14 7.5b	0.50b	36.75	19.50
Sharon, Pa.	27.75a	11.00a	36.75	20.50
Wheatland, Pa.	27.75a	7.75d	36.75	20.50
Erna, Pa.	26.50d	7.75d	36.75	18.50
Fontana, Calif.	23.75b	10.00b	36.75	20.50

‡ Threaded and coupled. a 3½ to 4 in. b Continuous weld. c 5 and 6 in. d 6 in.

* WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. (based on approx. $200 per net ton): *Butt Weld* ¼ in., 5½¢; ⅜ in., 6¢; ½ in., 6¢; ¾ in., 8½¢; 1 in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight rates plus 3% transportation tax to get destination price.

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: *Butt Weld* — 1 in. black, +32.75, galv. +57.0; 1¼ in. black, +32.75, galv. +56.5, 1½ in. black, +29.25 galv. +52.75; *Lap Weld* — 2½ in. to 3 in. black +33.50 galv. +55.5; 4½ in. to 6 in. black +30.50 galv. +50.75. Add freight rates plus 3% transportation tax to get destination price.

(Continued on page 81)

when cost competition is tough, you can make "DIVIDENDS UNLIMITED" with Ramset Fastening System for anchoring into steel or concrete

With tighter competition for every job, super-speed RAMSET SYSTEM offers one sure way of cutting installation time and expense. You can figure the lowest "fastener-in-place" cost to help you get more business, at a profit.

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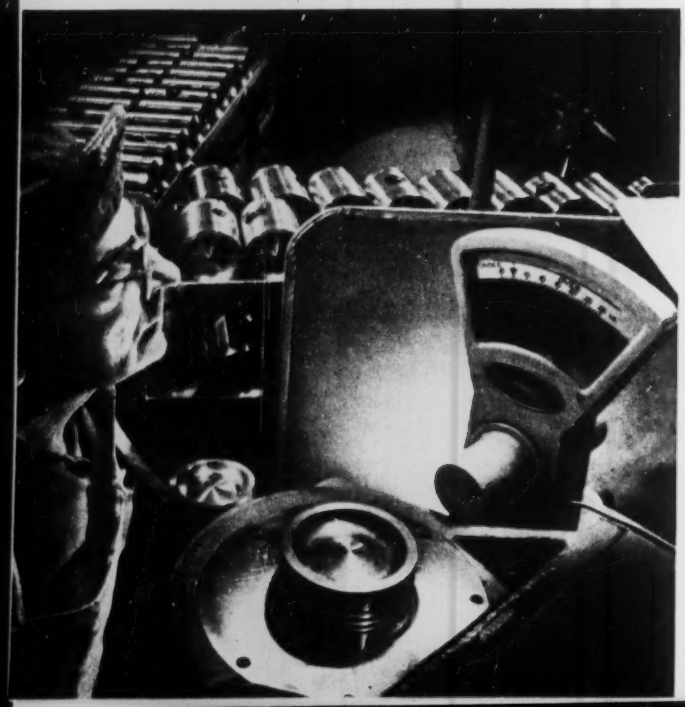
EN-11

Continuous Research by GM engineers aims at refinements and improvements in every component of GM Diesel engines. Here you're looking through the windows of a durability testing room where newly designed parts and new materials, as well as production engines, are subjected to overload conditions to determine their life and efficiency.

BUILT FOR KEEPS . . . and here's how we prove it!



General Motors Diesel engines go into more than 750 different models of construction, mining, drilling, farming and lumbering equipment, work and pleasure boats and scores of other applications.

Engines leaving our factory may be called upon for heavy-duty service in trucks, tractors or drilling rigs. They may propel a yacht or power a stand-by generator. But regardless of the application, *all* GM Diesel engines are designed and built to stand up under the most rigorous operation in round-the-clock service, week in and week out, year after year.

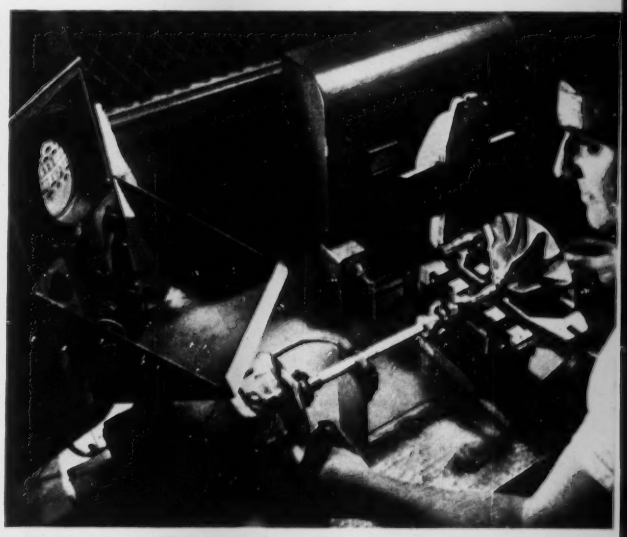
Here you see a few of the steps we take to insure top quality and peak performance in every engine we build—inside reasons why GM Diesels cost less to operate and maintain.

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN

Piston Weight Check—All pistons, whether for new engine production or for service parts stocks, are held within rigid weight limits. This machine not only weighs the piston but automatically machines off any excess weight. You're sure of a perfect fit and good performance when you buy *genuine* GM Diesel parts.

Surface Plate Inspection using a vernier height gauge and dial indicator to sample check location of counterbores which hold oil- and water-passage seals. This new head-to-block sealing method developed by Detroit Diesel is unique in the industry and has proved far superior to the over-all laminated gasket commonly used.

Cylinder Bore Inspection—This unique air-operated precision gauge checks the diameter and roundness of the cylinder bore at four different points simultaneously. Tolerances are held to .001" to assure a perfect fit for the replaceable cylinder liners.



Balancing Blower Impeller for a GM 6-110 Diesel engine, using a balancing machine developed by General Motors Research. Unit employs a cathode-ray oscilloscope. Blower scavenging makes the GM Diesel engine cleaner burning and gives it better high-altitude performance.

It pays to STANDARDIZE on

GM
GENERAL MOTORS
DIESEL POWER

Single Engines . . . 16 to 275 H.P. • Multiple Units . . . Up to 840 H.P.

Injector Testing—Every injector used in GM Diesel engines is run for one hour at full engine speed and then calibrated to assure the proper amount of fuel at each stroke. GM's unit injectors eliminate the need for high pressure fuel lines and bulky central metering pumps.

BUCYRUS-ERIE Announces the 180-W

. . . A NEW 5 CU. YD. WALKING DRAGLINE

Combining Big Output Capacity And Long Working Reach With Unusual Portability

Diesel or Ward Leonard Electric

THIS NEW 180-W offers the operating features that have proved so successful in many years of actual field performance by the outstanding line of Bucyrus-Erie walking draglines. In addition, it offers exceptional shipping and erecting ease for a machine so large — only partial disassembly necessary for moving from job to job. This means substantial savings in contract work, as well as increased value throughout its entire life.

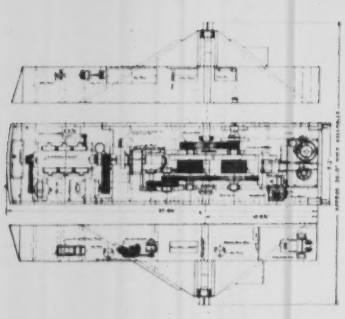
- Big output capacity from fast cycle, quick moves, steady all-weather performance.
- Long reach where needed — with 5-yd. bucket the 180-W will move material 244 ft. in a 180 degree swing.
- Knocks down into large sections for easy moving and erecting.
- Easily maneuvered to most effective working position with Bucyrus-Erie's exclusive walking mechanism.
- Large bearing area permits working on soft ground.
- Low maintenance with a minimum of moving parts.
- Simple main machinery.
- All-welded boom with tubular braces for light weight, plenty of strength.

Send for complete information on the 180-W
5-yd. bucket with 120 ft. boom
4-yd. bucket with 135 ft. boom

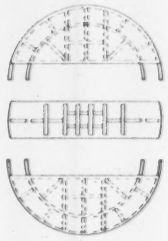
38L53C

BUCYRUS ERIE

BUCYRUS-ERIE COMPANY
SOUTH MILWAUKEE, WISCONSIN



For shipment the side wings unbolt from center section of revolving frame. The main machinery remains fully assembled and in proper alignment. The entire machine is easily loaded on five U.S. railroad cars.



The base is made up of three separate welded-steel sections which are joined in the field by bolting flanges. It is easily disassembled and shipped.

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 Lengths up to 20 ft. (Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	† $79.00	$82.50	$73.50	$76.00	$79.50	$83.00	$81.00	.....	.....
Baltimore	* 91.00	95.00	78.50	78.50	78.50	85.00	112.50		
	102.00g	*102.00g*	*94.00g*	*94.00g*	*94.00g*	*94.00g*	*98.00*	*$105.00*	*$105.00*
Birmingham	† 80.50	82.50	70.50	80.50	83.50	85.50	95.50		
	88.50	*88.50*	*77.50*	*79.50*	*78.50*	*78.50*	*88.50*	*85.50*	*85.50*
Boston	92/97a	91/100a	88/96*	90/98a	93/100a	96/108a			
	*88.00**	*88.00*	*92.00*	*92.00*	*92.00*	*92.00*	*100.00*	*108.00*	*110.00*
Chicago	** 94.00	97.00	85/86	94.00	96.00	99/100	103.00		
	94.00	*94.00*	*96.00*	*98.00*	*99/100*	*101/102*	*107.00*	*107.00*	*107.00*
Cincinnati	* 96.00	102.00	85.50	95.00	102.00	104.50	118.75		
	106.25	*106.25*	*108.00*	*106.50*	*108.00*	*106.25*	*133.00*	*133.00*	*133.00*
Cleveland	** 92.00	94.00	87.00	93.00	95.00	98.00			
			92.00	*93.00*	*93.00*	*93.00*	*105.00*	*105.00*	*105.00*
Dallas	k† 70.00	79.00	76.00	66.00	66.00	64.00	117.00		
Denver	* *Not in stock*		*106.00*	*106.00*	*106.00*	*106.00*	*122.00*	*135.00*	*140.00*
Detroit	‡ 110.00	115.00	100.00	110.00	113.00	115.00			
	95.50	*95.50*	*93.50*	*94.25*	*92.25*	*90.00*	*108.50*	*118.00*	*118.00*
Kansas City	* 107.50	107.50	102.50	105.00	108.00				
	105.00	*105.00*	*105.00*	*105.00*	*105.00*	*107.50*	*130.00*	*138.50*	*138.50*
Los Angeles	1 *82.00*	*82.00*	*82.00*	*82.00*	*82.00*	*82.00*	*110.00*	*115.00*	*110.00*
Minneapolis	# *155.00*	*155.00*	*155.00*	*155.00*	*155.00*	*155.00*	*155.00*	*155.00*	*155.00*
Montreal	ab90.00	92.00	92.00	92.00	102.00				
	165.00	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*
New Orleans	† 100.00	100.00	92.50	85.00	90.00	94.00	118.00		
	† *92.00*	*92.00*	*108.50*	*102.50*	*102.50*	*102.25*	*102.50*	*112.50*	*102.50*
New York	1 107.50	110.00	115/120	120/125	120/125	125/130	155/165		
			Range from $120.00 to $125.00				*135/150*	*149/159*	*149/159*
New York	** 88.00	90.00	75.00	88.00	90.00	92.00	125.00		
	88.00	*88.00*	*91.00*	*92.00*	*92.00*	*92.00*	*100.00*	*105.00*	*105.00*
Philadelphia	‡		**Range from $110.00 to $127.00**				110/127		
			Range from $120.00 to $150.00				*130/140*	*150.00*	*150.00*
Pittsburgh	†		**Range from $90.00 to $95.00**				110/120		
			Range from $110.00 to $120.00				*130/140*	*140/155*	*140/155*
St. Louis	kc108.00e	110.00e	100.00d	105.00d	113.00e	115.00e			
			108.00i	*114.00e*	*114.00e*	*115.00e*	*152.50e*	*162.50*	*172.50*
San Francisco	A† *52.00*	*52.00*	*58.00*	*58.00*	*55.00*	*55.00*	*55.00*	*55.00*	*57.00*
Seattle	† *75.00*	*75.00*	*75.00*	*75.00*	*75.00*	*75.00*	*85.00*	*85.00*	*85.00*

	LONG LEAF Y. P. Merchantable grade up to 20 ft.		PLYWOOD Rail freight increment (See note for base price)	
	2x12 Rgh	12x12 Rgh	⅜"	¾"
Atlanta			$22.32	$27.24
Baltimore	$155.00	$155.00	25.92*	31.60*
Birmingham	115.50	155.50	21.78	26.58
Boston	.....	.....	25.92*	31.60*
Chicago	132.00	132.00	22.45*	27.37*
Cincinnati	140.50	140.50	25.00*	30.48*
Cleveland	.....	.....	25.37*	30.93*
Dallas	96.00	117.00	18.72	22.80
Denver	.....	.....	13.92	16.98
Detroit	.....	.....	25.00*	30.48*
Kansas City	.....	.....	16.56	20.16
Los Angeles	.....	.....	16.61*ab	20.25*ab
Minneapolis	.....	.....	19.89*	24.25*
Montreal	.....	.....	.....	.....
New Orleans	150.00	148.00	18.72	22.80
New York	220/250	220/250	25.92*	31.60*
	.....	.....	.....	.....
New York	190.00	190.00	.....	.....
Philadelphia	210/220	210/220	25.92*	31.60*
Pittsburgh	110/120	115/125	25.92*	31.60b
St. Louis	.....	.....	18.72	22.80
San Francisco	.....	.....	12.22*a	14.91*a
Seattle	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8–12 ft. lengths. *e* 8–16 ft. lengths. *g* No. 1 common. *i* 8 ft. lengths. *k* No. 3 common. *n* 1¼ #1, 1¼ #2 & 1¼ #3.

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Plyform grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ⅜", $152.00; on ¾", $173.00. Exterior plyform ⅜" $171.00, ¾" $194.00. For other centers add rail freight increment from table on proper size Oiling and edge sealing charges included. *a* Lower rate by water shipment *b* 50,000 lb. minimum.

* Incl. new freight rates. Rates for other cities not avail. as we go to press.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS: Discounts from jobbers list, Feb. 1, 1950a, Single or Double Thickness, A quality	WINDOW GLASS: B quality	EXPLOSIVES: Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*	
Atlanta	79%	80%	$0.2365	
Baltimore	78%d	78%d	.2365	
Birmingham	83%	83%	.1840	
Boston	77-10%	77-10%	.2365	
Chicago	76%	76%	.2365	
Cincinnati	78%	78%	.2365	
Cleveland	76-10-10%	76-10-10%	.2765	
Dallas	75%	75%	.2440	
Denver	80%	80%	.2415	
Detroit	78-10-10%	78-10-10%	.2365	
Kansas City	80-10%	80-10%	.2415	
Los Angeles	73%	78%	.2390	
Minneapolis	75-10%	75-10%	.2415	
Montreal	40-5%bc	40-10-5%b	21.60Ai	
New Orleans	78%	77%	.2415	
New York	80-10-5%	80-10-5%	.3975g	Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40%
Philadelphia	78%	80%	.2365	
Pittsburgh	82%	82%	.2090	
St. Louis	80-10%	80-10%	.2415	
San Francisco	70%	70%	.2365	
Seattle	73%	76%	.2390	

Glass: *a* Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *d* Discount 6/15/52.

Explosives: * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h* F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $23.35. *i* F.o.b. Beloeil (near Montreal).

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.184	$0.2165	$0.2365
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.189 - .1965	.2215- .229	.2415- .249
Rocky Mtn. States	.189 - .2015	.2215- .229	.2415- .254
Pacific N. W. States	.1865- .199	.219 - .2315	.239 - .2515
Pacific S. W. States	.184 - .1915	.2165- .219	.2365- .2415

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail: Pine*	By Rail: Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.—3-ft. from butt	8-in.	91 to 100-ft.	....	....
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	.80/.88	....
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.78/.83	.93
14-in.—2-ft. from butt	8-in.	80 to 85-ft.	.83/.93	.94
14-in.—2-ft. from butt	8-in.	85 to 89-ft.	....	1.00
14-in.—2-ft. from butt	8-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities.

/RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	....	....	....	....
	Pine	....	....	....	....
New York	S. L. Sap Pine	$2.55	$4.35	$3.45	$5.45
	Mixed Oak	3.10	4.65	3.70	5.95
Birmingham	Hardwood	2.40	3.88a	2.85	4.58a
Chicago	Red Oak	....	3.40a	....	4.30/4.40a
Los Angeles	Douglas Fir	....	....	....	....
	Redwood	....	....	....	....
Philadelphia	Red Oak	2.55	3.90	3.45	5.10
St. Louis	White Oak	3.10		3.90	
	Red Oak	3.00	3.75a	3.70	4.60a
	Sap Pine or Cypress		3.55a		4.50a
San Francisco	Douglas Fir	2.15e	3.15ef	2.90bf	4.25eaf
Montreal	Birch or Maple	h	h	h	h

Tr.—Treated; Untr.—Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *e* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *i* Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.0825
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	27.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.75
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	10.35

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, In paper, Carload lot. Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	$195.00	$207.00	$247.50	$327.00	$342.00	$381.50	$27.38	$27.38	$19.00	$17.50	$17.50
Baltimore	186.00	198.35	372.00	421.50	549.00	627.00	36.00*k*	41.00*k*	32.00	21.50	.....
Birmingham	126.00*p*	136.00*p*	.....	284.00*p*	.....	.....	23.50*ff*	28.00*gg*	29.25	17.30	.....
Boston	196.00†	209.00†	392.00†	383.25†	.....	.....	36.85*p*	39.85*p*	30.00†	28.00†	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	26.00	28.00	30.80	26.00	.....
Cincinnati	185.00*f*	195.00*f*	340.00*fdd*	.....	.....	.....	45.00*f*	46.00*f*	26.00*f*	26.00*j*	.....
Cleveland	172.00**	183.00**	.....	.....	.....	.....	34.50	34.50	28.25	23.25	32.00*ee*
Dallas	.....	118.00	.....	.....	.....	.....	19.75	35.25	32.00	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	41.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	130.00	138.00	259.00	.....	317.25	362.60	37.25*cc*	35.60*cc*	33.50	29.50	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	28.50	.....	32.00	26.00	28.50
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	27.50§	.....	34.00	34.00	35.00
Minneapolis	175.00*p*	196.00*p*	407.00*p*	196.00*wp*	.....	.....	35.00*wp*	45.00	39.00*bbe*	29.00*bbe*	41.00*bbde*
Montreal	165.00*aq*	181.00*aa*	325.00*au*	230.00	248.00	.....	38.50	48.00	34.80	32.50	26.00*u*
New Orleans	170.00	170.00	310.00	380.00	.....	.....	31.00	.....	.....	28.00	28.00
New York	140.95*h*	150.30*h*	206.70*ch*	225.50*hn*	.....	.....	37.00	.....	36.00	32.00	.....
Philadelphia	145.30	155.00	290.60	348.70	.....	.....	30/34	35/42	25.00	23.00	2.97
Pittsburgh	112.00	117.00	189.00	216.00	279.00	317.00	36.00	46.00*y*	25.00	23.00	2.97*m*
St. Louis	142.00*cc*	160.00*cc*	319.00*cc*	465.00*cc*	439.00	621.50	40.00*sl*	36.00*s*	.90*aa*	.75*aa*	1.25*aaspss*
San Francisco	156.85*a**	177.10*a**	235.30*dda**	.....	.....	.....	37.00	.....	26.60	26.60	2.65*m*
Seattle	223.00*cc*	230.00*cc*	.....	240.00*ccw*	.....	.....	34.00*s*	49.00*s*	42.00*hh*	37.50*q*	3.90*mhh*

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverized hot. *e* 5%, 10th following month. *g* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *j* Truck load or over. *k* $1.00 discount *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11¼. *u* Tax exempt. *w* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. § F.o.b. yard. *q* Per ton price, no incr. ** Warehouse delivery. * F.o.b. Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 500-lb. (Approx.) bbl. Dry *a*	WHITE LEAD Per 100 lb. in 100 lb. cases in oil *w*	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES Carload lots f.o.b. factory Rolls, slate surfaced, 85–90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl per ton
Atlanta	$16.25	$28.275	$3.26	$3.51	$3.01	$2.74	$3.01	$2.98	$0.405	$39.75
Baltimore	16.00	27.90	2.75	4.25	3.35	2.66	4.43	4.43	.47	45.56
Birmingham	16.25	28.275	3.90	3.40	....	2.93	2.93	2.93	....	42.00*ss*
Boston	16.00	27.90	....	....	....	2.90*gg*	3.03*gg*	3.03*gg*	.42*g*	47.00*q*
Chicago	16.00	27.90	....	....	....	3.29‡*u*	3.29‡*o*	3.29‡*o*	38.00‡*bbr*	48.00‡
Cincinnati	16.00	27.90	....	....	....	2.735	2.735	2.735	.46*y*	47.86
Cleveland	16.00	27.90	2.47*pqq*	2.69*qq*	2.55*qq*	2.97*q*	2.91*o*	2.91*o*	.43*y*	40.70*hh*
Dallas	16.25	28.65	....	4.05	....	3.50*q*	3.75*o*	4.35*o*	.36	58.50*hh*
Denver	16.50	28.40	3.07	5.15	2.87	2.66	2.61*o*	2.61*o*	.43*ff*	47.00
Detroit	16.00	27.90	2.35	3.25	2.50	2.97	2.91*f*	2.91	.53	44.00
Kansas City	16.00	28.65	....	2.71*ys*	2.65	3.40	3.20*o*	3.20*o*	.43	53.00
Los Angeles	16.00	28.15	3.30*	4.50*	4.20*	2.48*	1.66*e*	*l*	.55*	*l*
Minneapolis	16.00	29.88/28.02	....	....	....	2.74*hidd*	2.74*hidd*	2.74*hidd*	.44*idd*	42.00*r*
Montreal	....	21.15	2.95*pfff*	4.05*fff*	3.25*fff*	4.85*t*	3.65*tf*	3.65*tf*	1.24*kt*	3.78*h*
New York	16.00	27.90	....	....	....	2.79*e*	2.74*go*	2.74*go*	.44*gz*	42.00*
Philadelphia	16.00	27.90	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	16.00	27.90	2.65	2.85	3.15	2.95	3.10*o*	3.10*o*	.35	45.00
St. Louis	16.00	27.90	....	....	....	2.74	2.74*h*	2.74*h*	.42*y*	42.50
San Francisco	16.00	28.15	2.40	....	3.40	2.95	4.00*aa*	....	.49	....
Seattle	16.00	28.40	3.07*m*	2.93*m*	....	3.58*mgcc*	3.05*hmcc*	....	.59*mcc*	52.00*fmu*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *g* F.o.b. yard, Roxbury. *h* Per roll. 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* F.o.b. city. *o* Per 60-lb. *p* 6-drum, 50 gal. ea. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *s* 466 Med. *t* Federal tax included. *u* Per 90 lb. square. *w* Per ton. *w* Price to large paint contractors is $1.25 less. *x* Mineral surfaced. *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement; Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal. drums. *gg* F.o.b. factory. *hh* Incl. freight. *D*, Std Black. *E* Ready-mixed, *F*, Over 80% ferric oxide. * Aver. wt approx. 500 lbs. *g* Freight allowed to destination not exceeding .50 cwt.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$3.10	$2.50	$2.75	$2.50	$2.90	$2.75	$2.90	$1.28	$1.28
Baltimore	3.20*d*	2.75	3.275*i*	3.10/3.25	3.075*e*	2.875	2.975*f*	1.675*i*	1.675*i*
Birmingham	3.15	2.40	2.825*h*	2.245	2.62	2.875	2.875*h*	1.30	1.40
Boston	3.185*	2.75	3.15*i*	3.20	3.20*f*	3.13*d*	3.10*d*	1.99*	1.99*
Chicago	3.40*k*	3.15*	3.20 =	3.00*m*	3.525*g*	3.37*f*	3.24*	2.35*h*	2.35*h*
Cincinnati	3.225	2.875	2.99*h*	2.75/3.00	3.05	3.03*N*	3.125*h*	2.02	2.02
Cleveland	3.25*i*	3.20*d*	3.20*i*	3.20	3.20	3.20	3.20*	2.45	2.45
Dallas	3.50	2.625	2.75	2.75	3.437	2.90	2.90	1.40	1.40
Denver	3.50	2.775	2.75	2.705	3.30	3.00	2.97	1.80	1.80
Detroit	3.33*	3.08*	3.23*	3.23*	3.32*f*	3.22*ff*	3.15*h*	2.28*	2.28*
Kansas City	3.625	2.675	2.895	2.64/2.885	3.25	2.987*	3.075*h*	1.98	1.98
Los Angeles	3.285*g*	2.70	2.925*h*	2.57	3.437	3.10	3.225*	2.05	2.05
Minneapolis	3.125	2.70	2.82	2.65	2.90*	3.00*q*	2.875	1.95	1.95
New Orleans	3.05	2.42	2.80=	2.60	2.625	2.925*h*	2.75*	1.375	1.375
New York	3.874*hr*	3.43*hf*	3.750*fi*	3.69*f*	4.00*fd*	3.63*aaff*	3.675*fd*	2.20	2.20
Philadelphia	3.62*i*	3.10	3.51*iM*	2.875/3.625	3.55*i*	3.55*	3.515*d*	1.875	2.175*
Pittsburgh	3.475*h*	3.20*h*	3.475*h*	3.325*h*	3.30*h*	3.35	3.00	2.025*h*	2.025*h*
St. Louis	3.62*e*	2.975*h*	3.025*h*	3.00	3.25*h*	3.28*e*	3.05*ff*	2.095*h*	2.095*h*
San Francisco	3.4750*k*	2.905*h*	3.075*h*	2.66	3.45*hh*	3.225*h*	3.275*k*	2.075*h*	2.075*h*
Seattle	3.30	2.58	2.78	2.71	3.15	2.925	2.95	2.18	2.214
Montreal*†	2.00	1.80	1.90	1.70	2.00	1.90	1.90	1.25	1.25

* Cost of living bonus now included in basic wage. † Plus 2% vacation pay.

a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vac. stamp fund plus 7¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. *d* Incl. 10¢ H&WF. *e* Incl. 6¢ H&WF. *f* Incl. 6% WF. *g* Incl. 11½¢ WF. *h* $2.625 homes & housing plus 7½¢ WF. *i* Incl. 12¢ WF and 15¢ PF. *j* Incl. 10½¢/hr WF. *k* Incl. 7½¢/hr. WF. *l* Incl. 4% VF. *m* Incl. 5¢ hr WF. *n* Incl. 20¢ H. W. Ins., Vac. & Retirement. *o* Incl. 10¢ PF, 8¢ WF. *p* Incl. 3% WF, 3% PF. *q* Incl. 3½% WF and 20¢ PF. *r* Incl. 5% W&PF, 4% VF, 1% NC, 6 PH. *s* Incl. 7½¢ H&WF. *t* Incl. 11½% WF. *u* Incl. 10¢ WF. *v* Negotiating. *w* Incl. 8¢ WF. *x* Incl. 22½¢ WF. *y* Incl. 7½¢ IF, 5¢ H&WF. *z* Incl. 10¢ WF, 10¢ PF & 20¢ B.F. *aa* Incl. 3% WF. *bb* Incl. 21½¢ H&WF. *cc* Plus 5% WF, plus travel pay per day. *dd* Plus $1 per day travel time. *ee* Incl. 11¢ H & WF. *ff* Incl. 7¢ WF. *gg* Incl. 15¢ H&WF. *hh* Incl. 4% WF, 6PH. *ii* Incl. 10¢ H&WF 10¢ VF 2½% PF. *jj* Incl 3% WF, 3% PF, 1% VF, 1% EF. *kk* Incl 7½¢ PF. *N* Incl 1% WF O Incl 2% WF, 1% PF.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Sept.'53	Oct.'53
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	.84	.84
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	.84	.84
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	1.88	1.88
Bricklayers (8 hr. day) 1 cl.	av. per hr.	1.88	1.88
Struct. Iron Workers (8 hr. day)	av. per hr.	1.13*	1.13*
Remachadores			
Struct. Steel Shapes			
3"-15" x 12 meters	per metric ton	1224.23	1224.23
Reinf. Steel, Corr. Rods			
⅜" x 11 meters	per ton	1250.00	1250.00
½" x 11 meters	per ton	1240.00	1240.00
⅝" x 11 meters	per ton	1230.00	1230.00
¾" x 11 meters	per ton	1220.00	1220.00
⅞" x 11 meters	per ton	1220.00	1220.00
1" x 11 meters	per ton	1220.00	1220.00
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	60.00	60.00
Rose Gravel	per tr. load	55.00	55.00
Cement, Std. Port. (Tolteca)	per ton	160.00	160.00
Lumber			
Mex. Sacred Fir (OYAMEL)	per M ft.	750.00	750.00
1st Class Pine	per M ft.	1350.00	1350.00
2nd Class Pine	per M ft.	1100.00	1100.00

* 1st & 2nd fl. add 40% ea. addn'l floor over preceding one.

ENR Skilled Average: (Bricklayers, Carpenters, Iron workers): $3.086 **ENR Common Average:** $1.928

Assembled and ready for erection are several of 28 Monocord Timber Trusses fabricated by Weyerhaeuser and furnished by Wallis Lumber Company for the 220' x 112' Del Monte products warehouse in Crystal City, Texas.

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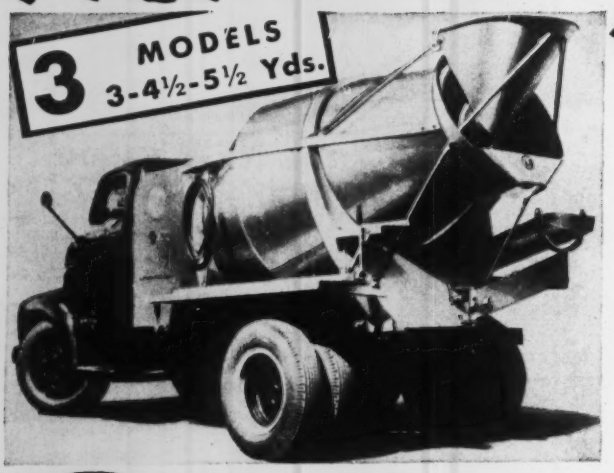

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J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—BUILDINGS

Conn., Meriden—SCHOOL, etc.—B.A. 11/12—City School Bldg. Comn., Bd. Educ., Hanover School addn., renovations. $300,000. Plans deposit $50. Williard Wilkins, 945 Asylum Ave., Hartford, archt. CD 12/4/51.

Conn., Stamford—SCHOOL—B.A. 11/16—City, City Hall, Roxbury Elementary School, Roxbury and West Hill Rds. $500,000. Plans deposit $25. Sherwood Mills & Smith, 65 Broad St., archts. CD 2/23/51.

Conn., Willimantic—PAROCHIAL SCHOOL—B.A. 11/19—St. Mary's Roman Catholic Parish, 72 Maple Ave., Willimantic, parochial school, Valley St. $500,000. Plans deposit $50. Emilio John Di Rienzo, 100 Stephens Ave., Mt. Vernon, N. Y., archt. CD 6/19.

† **Me., Corea**—FACILITIES—B.A. On Or About 11/24—U. S. Eng., 857 Commonwealth Ave., Boston 15, Mass., constr. facilities, incl. 20x48 ft., concrete operations bldg., 20x48 ft. concrete power bldg., 20x96 ft. wood bachelor officers quarters, 20x144 ft. wood barracks, 20x96 ft. concrete recreation-training-dispensary, 20x48 ft. wood administration, 20x96 ft. concrete technical supply, 20x48 ft. concrete general supply, ENG-19-016-54-50. $260,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

J. F. White Contg. Co., 201 Alewife Brook Parkway, Cambridge, Mass. LB $307,267, est. $300,000. bridge constr. Middlesex Pike Rte. 3, Billerica. Bids Oct. 20. CD 10/7, under Streets and Roads.

Del Prete Constr. Co., Inc., 177 Concord St., Rockland, Mass. LB $99,629, est. $120,000. Proj. 1339, sea wall Duxbury Beach, Duxbury, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Oct. 20. CD 10/13.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

V. Barletta Co., 10 Whipple Ave., Roslindale, Mass. LB $703,657, est. $709,000. state fly. and bridge constr. Rte. 3, Bedford. Bids Oct. 20. CD 10/7.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Concrete Constr. Co.**, 11 Garfield Ave., Chelsea, Mass. LB $1,811,000. Central Junior High SCHOOL, off Broad St., East Weymouth, WEYMOUTH, MASS. Town, Elmer S. Mapes, supt. Schools, 89 Middle St., Weymouth, Mass. Bids Oct. 20. CD 10/5.

Austin Co., 450 W. 1 Ave., Roselle, N. J. CA, $160,000, WAREHOUSE, MONTVILLE, CONN. Robert Gair Co., Inc., Thames River Dr., Montville, Conn.

Massacoe Builders, Inc., Meadow Plains Rd., Simsbury, Conn., CA, $507,000, new elementary SCHOOL, WINDSOR LOCKS, CONN. Town Bd. Educ., Windsor Locks, Conn. Bids Sept. 30. CD 10/6, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲ **N. Y., Mineola**—B.A. 11/17—Bd. Supervs. Nassau Co., Court House, 33.7 mi. lateral sewers from near Southern State Parkway to northern part of Peninsula Blvd. and from Ocean Avve. to Lynbrook-Malverne line, Valley Stream, $3,085,610, Henry W. Taylor, 6 Parkside Dr., Pt. Lookout, engr.; 22.5 mi. lateral sewers from Sunrise Hy. to Rebecca Lane and Oceanside Line to Silver Lake area, Baldwin, $2,142,445, Clarence MacCullum, 937 Pt. Washington Blvd., Port Washington, engr., CD 9/20/51 trunk sewer from W. Hawthorne Ave. and Hicks St., Valley Stream to S. 12 St. and Jericho Turnpike, New Hyde Park, $1,771,572. CD 9/19/51.

† **N. J., Wrightstown**—AVGAS, etc.—B.A. On Or About 12/3—U. S. Eng., 121 N. Broad St., Phila. 1, Pa., Avgas, jet fuel and lube oil facilities, McGuire Air Force Base, 1½ mi. southeast of here, Burlington Co., ENG-36-109-54-20. Extended date. CD 8/20.

BIDS ASKED—BUILDINGS

▲ **N. Y., New York**—HOUSING—B.A. 11/17—New York City Housing Auth., 63 Park Row, Zone 38, foundations and general constr., heating and ventilating, electrical work, plumbing, furnishing, installing elevators for LaGuardia Houses, Proj. No. NY-5-21, Sect. I, incl. Bldgs. 4, 5, 7, and 9, in areas in Manhattan Boro, in block bounded by Montgomery Monroe, Clinton and Madison Sts., Bldg. 5 in easterly half of block bounded by Madison, Clinton, Monroe and Jefferson Sts. and Bldg. 4 in easterly half of block bounded by Monroe, Clinton, Cherry and Jefferson Sts. Plans deposit $75, $25 elevators. Extended date.

▲ **N. Y., New York**—HIGH SCHOOL—B.A. 11/19—Bd. Educ., 49 Flatbush Ave. exten., Brooklyn, Zone 1, general contract Junior High School 135, Wallace, Mace, Holland and Warring Aves. $2,175,000. Plans deposit $33. CD 9/8/48.

▲ **N. Y., Bayside**—HIGH SCHOOL—B.A. 11/20—Bd. Educ., 49 Flatbush Ave. Exten., Brooklyn, Zone 1, general constr. Junior High School 158, Oceana St., between 46 and 47 Aves., E-674. $1,773,772. Plans deposit $30.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore,

T. B. Gatch & Sons, Inc., 5928 Belair Rd., Baltimore, Md., LB $512,218. grading, drainage, wid'n., surf. 2.674 mi. U.S. Rte. 1 near Conowingo, Contr. H 363-2-415, Harford Co. Bids Oct. 20. CD 10/7.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore,

Jas. Julian, Inc., Elsmere, Del. LB $484,323. grading, drainage, surf. 3.639 mi. U.S. Rte. 50, near St. Peter's Church, Q-252-5-215, Queen Anne Co.

Columbia Constr. Co., 1301 Towson St., Baltimore, Md. LB $474,328. Contr. 376 sewers, BALTIMORE, MD. City, Bureau Sewers, 312 Municipal Bldg., Baltimore 2, Md. Bids Oct. 21. CD 10/7.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Ruscon Estates Homes**, c/o Alexander Knowlton, archt., 14 Steamboat Rd., Great Neck, N. Y. Owner Builds. $1,250,000. 125 HOUSES, 45-acre tract, north side of Hy. 25, RIVERHEAD, N. Y.

Weller Lane, Inc., c/o Benjamin Levinson, archt., 167-16 Hillside Ave., Jamaica, N. Y. Owner Builds. $308,000. 28 HOUSES, 253 St. and 147 Ave., ROSEDALE, N. Y.

Morrow Bros., Inc., 2315 N. Charles St., Baltimore, Md. CA $692,700. brick, block, concrete, steel Oakleigh Elementary SCHOOL, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. CD 10/7.

Thos. H. Ryan, 4604 Wisconsin Ave. N. W., Wash., D. C., CA, $312,000, three 3 story, brick, cinder block, APARTMENTS, 13 units each, 13 and Congress Sts., S.E., WASH., D. C. Elmer S. Young, 4604 Wisconsin Ave. N.W., Wash., D. C. Santmyers & Thomen, 2209 L St. N.W., Wash., D. C., archt's.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Va., Norfolk**—PAVING—B.A. 11/10—P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Zone 11, addnl. paving at U. S. Naval Air Station, NOY 75701, Spec. 35855. Plans deposit $20.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

† **Va., Yorktown**—SMOKESTACK, etc.—B.A. 11/10—P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, removal of smokestack, boiler house, Shed No. 2, Naval Mine Depot, NOY 81514, Spec. 40507/SF. Plans deposit $10.

Ga., Macon—B.A. After 11/20—City, City Hall, Improv. at Riverside Pumping Station, $775,000. Wiedeman & Singleton, P. O. Box 1878, Atlanta, engrs. CD 5/13.

BIDS ASKED—BUILDINGS

N. C., Goldsboro—COURT HOUSE—B.A. 11/10—Wayne Co., Court House, court house addn. Plans deposit $75. Allen J. Maxwell, Jr., Borden Bldg., archt. CD 7/13.

S. C., Columbia—WARD—B.A. 11/12—South Carolina State Mental Health Comn., State Capitol, two addnl. ward bldgs., State Hospital. $750,000. Plans deposit $100. Extended date. Lafaye, Fair, Lafaye & Assocs., 1226 Sumter St., archts. CD 10/9.

S. C., Kingstree—SCHOOL—B.A. 11/18—Williamsburg Co. Bd. Educ., Kingstree, Negro Training School. $400,000. Plans deposit $50. James & Durant, Sumter, archt.

N. C., Fayetteville—NURSES RESIDENCE—B.A. 11/20—Cumberland Co., Fayetteville, nurses residences. $400,000. George Watts Carr, 111 Corcoran St., Durham, archt.

▲ **Tenn., Morristown**—HOSPITAL—B.A. After 11/20—Hamblen Co., Morristown, hospital. $1,000,000. Bianculli & Palm, 501 Cherry St., Chattanooga, archts. CD 9/19/52.

Ga., Franklin—SCHOOL—B.A. 11/24—Heard Co. Bd. Educ., Franklin, high school, $500,000. Plans deposit $60. Francis M. Davis & Assocs., 57 8 Ave. N. E., Atlanta, archts. CD 8/27/52.

Ga., Blue Ridge—SCHOOLS—B.A. 12/15—Fannin Co. Bd. Educ., Blue Ridge, 2 high schools. $750,000. McDonald & Co., Walton Bldg., Atlanta, archts. CD 8/27/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

F. W. Showalter, Allied Arts Bldg., Lynchburg, Va. CA $146,500, sewage disposal plant, CLARKSVILLE, VA. Town, Town Hall, Clarksville, Va. Bids Oct. 16. CD 9/30.

▲† **William H. Singleton Co., Inc.**, P.O. Box 392, Hampton, Va., CA $1,394,473, reconization sys., L-6380, LANGLEY FIELD, VA. National Advisory Com. for Aeronautics, Langley Field, Va. Bids Sept. 29. CD 10/9, under LB.

† **W. T. Byrns**, 157 E. Sewells Point Rd., Norfolk, Va., LB $429,968, new facilities for LST Piers, Annex II, NAB, NOY 75689. LITTLE CREEK, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Bids Oct. 20. CD 10/2.

Cleary Bros. Constr. Co., West Palm Beach, Fla., CA, $903,592, constr. 1,400 ft. steel, concrete bridge linking Orange and Silver Beach Ave., DAYTONA BEACH, FLA. Colusia Co. Comn., Court House, Daytona Beach, Fla. Bids Oct. 22. CD 9/15.

TENNESSEE—State Dpt. Hys. & P. Wks., Cotton States Bldg., Nashville,

Harrison Constr. Co., Maryville, Tenn. CA $644,628. bit. materials wid'n. and resurf., constr. three concrete deck girder bridges 4.9 mi. sect. St. Rte. No. 35, Proj. No. F-035-1-(1), Sevier Co. Bids Oct. 9. CD 10/14, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Skinker & Garrett Contractors**, 1719 I St. N.W., Wash., D. C. CA $2,041,370, Williamsburg Junior HIGH SCHOOL, ARLINGTON, VA. Bd. Educ., 1426 N. Quincy St., Arlington, Va. Bids Oct. 1. CD 10/6, under LB.

C. P. Neal Constr. Co., P.O. Box 278, Forest City, N. C., LB $512,000. Candler-Sand Hill HIGH SCHOOL, ASHEVILLE, N. C. Buncombe Co. Bd. Educ., Asheville, N. C. Bids Oct. 20. CD 10/9.

King-Hunter, Inc., P.O. Drawer V-2, Greensboro, N. C. CA $150,000. MILL addn., REIDSVILLE, N. C. Cone Mills Corp., Reidsville, N. C.

W. & N. Const. Co., Easley, S. C. CA $100,000. WAREHOUSE, GREENVILLE, S. C. Old Colony Furniture Co., Augusta Rd., Greenville, S. C. CD 9/14.

Cecil's, Inc., P.O. Box 1895, Spartanburg, S. C. LB $548,800. Terrells Bay SCHOOL, MARION, S. C. Marion Co. Bd. Educ., Marion, S. C. Bids Oct. 14. CD 9/30.

C. D. Spangler Constr. Co., P.O. Box 3007, Charlotte, N. C. CA $663,000. 2 HIGH SCHOOLS, McCORMICK, S. C. McCormick Co. Bd. Educ., McCormick, S. C. Bids Oct. 13. CD 10/1.

Cecil's, Inc., P.O. Box 1895, Spartanburg, S. C., LB Est. $500,000. PLANT, NORTH CHARLESTON, S. C. Bird & Son, Inc., P.O. Box 141, Charleston, S. C. Bids Oct. 5. CD 10/1.

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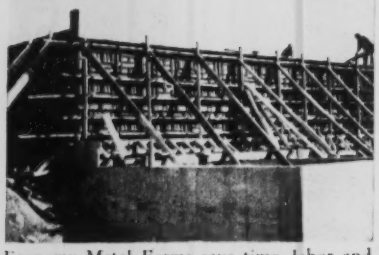

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Coite Somers Constr. Co., Vidalia, Ga., LB $661,000. HOSPITAL addns., alterations, STATESBORO, GA. Bulloch Co., Statesboro, Ga. Bids Oct. 21. CD 9/30.

▲ E. A. Scott & Sons, Americus, Ga., CA $1,384,639 HIGH SCHOOL and ELEMENTARY SCHOOL, WAYNESBORO, GA. Burke Co. Bd. Educ., Waynesboro, Ga. Bids Oct. 8. CD 10/13, under LB.

▲ William S. Smith Constr. Co., 2479 Edgewood Ave., Jacksonville, Fla. Owner Builds. $1,000,000, SHOPPING CENTER for Brentwood Subdivision; $5,000,000, 600 RESIDENCES, Brentwood Subdivision, JACKSONVILLE, FLA.

▲ Babcock Co., 2818 S.W. 18 St., Miami, Fla. Owner Builds. $1,000,000, 130 RESIDENCES, in Fairmount Subdivision, MIAMI, FLA.

Dyson Constr. Co., P.O. Box 22, Pensacola, Fla., CA $779,000. municipal AUDITORIUM, PENSACOLA, FLA. City, City Hall, Pensacola, Fla. Bids Oct. 22. CD 10/5.

Winchester Constr. Co., 828 Baker St., Tallahassee, Fla. LB, $704,490. men's DORMITORY, Florida A & M College, TALLAHASSEE, FLA.; Florida State Bd. Control, Education Bldg., Tallahassee, Fla. Bids Oct. 22. CD 9/30.

Northgate Homes, Inc., 9519 Dartmouth Ave., Tampa, Fla. Owner Builds. $750,000, 100 RESIDENCES, TAMPA, FLA.

Precision Builders, 9519 Dartmouth Ave., Tampa, Fla. Owner Builds. $800,000, 100 RESIDENCES TAMPA, FLA.

Atlas Constr. Co., Box 1006, Texarkana, Tex. CA $501,629. 2 story, 42x300 ft. concrete block inside CELL BLOCK BLDG., Louisiana State Penitentiary, ANGOLA, LA. State Div. Admin., State Capitol, Baton Rouge, La. Bids Oct. 20, awarded Oct. 21. CD 9/30.

Adcock & Booth Constr. Co., Monroe, La. CA Est. $950,000. 156 RESIDENCES, MONROE, LA. Troy & Nichols, Monroe, La.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† Illinois—B.A. 11/10—U. S. Eng., 420 Locust St., St. Louis 2, Mo., stone dike and bank protection Mississippi River, Chain of Rocks Canal, Madison Co., CIVENG-23-065-54-43. CD 1/28.

BIDS ASKED—BUILDINGS

Wis., Jefferson—HOSPITAL—B.A. 12/1—Jefferson Co., 3 story hospital, $600,000. Plans deposit $40. Law, Law, Potter & Nystrom, 121 S. Pinckney St., Madison, archts. CD 5/29/52.

▲ Mich., Northville—SPECIAL TREATMENT—B.A. 12/2—State, A. N. Langius, dir., Lewis Cass Bldg., 300 S. Walnut St., Lansing, 2 story, concrete special treatment bldg., Northville State Hospital, $1,200,000. Plans deposit $25, refundable. O'Dell, Hewlett & Luckenbach, 950 Hunter Blvd., Birmingham, archts. CD 10/25/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ OHIO—Ohio Turnpike Comn., 139 E. Gay St., Columbus,

T. L. James Co., Ruston, La., CA $11,291,450, 12.1 mi. Constr. Sects. 17, 18 and 19, Cuyahoga Co. Bids Oct. 10. CD 10/23, under LB.

Murdock Constr. Co., 1686 West St., Norwood, O., CA $396,508, est. $464,500, wid'n. Langdon Farm Rd. from Montgomery Park to Wielie Rd. to four-lane concrete thoroughfare, install 8- to 48-in. pipe sewer drains, inlets, pavements where required, CINCINNATI, O. City, City Hall, Cincinnati, O. T. J. Montgomery, Cincinnati, O., city engr. Awarded Oct. 19. CD 11/7.

† Grant Constr. Co., Greenville, O., LB, $96,145 placing hydraulic fill in levee borrow pit, Stringtown-Ft. Chartres & Ivy Landing Drainage & Levee Dists., Proj. Item V-A, CIVENG-23-065-54-28, ILLINOIS. U. S. Eng., 420 Locust St., St. Louis 2, Mo. Bids Oct. 19. CD 9/24.

Effingham Water Works Co., Effingham, Ill. Own Forces, laying 5,000 lin. ft. 6-in. c.i. pipe to bring addnl. water from Little Wabash River to meet emergency caused by lack of rainfall, EFFINGHAM, ILL.

† Mosbeck Oil Co., 1535 E. 75 St., Chicago, Ill., LB, $87,000, est. $87,900 central heating plant, Glenview Naval Air Station, GLENVIEW, ILL. Ninth Naval Dist., Great Lakes Naval Training Station, Great Lakes, Ill. CD 12/4/52.

▲ Joseph P. Keeley Contg. Co., 648 N. 42 St., East St. Louis, $439,657, two sections;
Keeley Bros. Contg. Co., 4211 State St., East St. Louis, Ill., CA, $1,144,527, eight sections;
Cardinal Constr. Co., Inc., 4301 State St., East St. Louis, Ill., CA, $500,919, two sections sewers in Outer State Street (Edgemont-Oak Park) and Lansdowne areas city, EAST ST. LOUIS, ILL. City, Alvin G. Field, Mayor, City Hall, East St. Louis, Ill. Bids Aug. 5, awarded Sept. 30. CD 7/7.

WISCONSIN—State Hy. Comn., State Office Bldg., Madison,
John F. Bloomer Co., Bloomer Bldg., Appleton, Wis., CA, $849,950, ballast and base course 4.758 mi., Proj. F 03-2 (14), Contract 1, Winnebago Co. Bids Oct. 20. CD 10/23, under LB.

▲ Chapel & Amundson, 708 S. Broadway, Green Bay, Wis., LB, $2,920,744, pipe line, intake etc. for water supply, GREEN BAY, WIS. Green Bay Water Comn., Green Bay, Wis. Bids Oct. 19. CD 9/29.

Cunningham-Ortmayer Co., 2016 W. Cornell St., Milwaukee 6, Wis., CA, $79,777 asphalt plant, MILWAUKEE, WIS. City, City Hall, Milwaukee, Wis. Bids June 23. Lloyd D. Knapp, city engr.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Sam W. Emerson Co., 1836 Euclid Ave., Cleveland 15, O., CA, $3,500,000. 3 story MUSEUM, annex, CLEVELAND, O. Cleveland Museum of Art, 1150 E. Blvd. Cleveland 6, O. Awarded Oct. 23. CD 3/26.

▲ Homestead Builders, Inc., 301 Beacon Pl., Munster, Ind., Owner Builds, $1,000,000, 100 HOMES, 170 and 171 Sts., HAMMOND, IND. Kenneth Vaughn, 6714 Madison St., Hammond, Ind., archt.

Geo. Sollitt Constr. Co., 301 S. Columbia St., South Bend, Ind., LB, $404,149, SHOPPING CENTER, Edwardsburg Rd., SOUTH BEND, IND. Greenwood Bros., c/o Roy Worden & Assocs., archts., 312 W. Colfax St., South Bend, Ind.

▲ A. L. Jackson Co., 161 E. Erie St., Chicago 11, Ill., LB, $1,089,870, 12- level 495-car parking GARAGE, La Salle St. and Court St., opposite City Hall, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Oct. 19. CD 9/28.

O. A. Anderson, 1155 Waukegan St., Glenview, Ill., Owner Builds, $800,000, 36 HOMES, sewers and water lines in Westside, GLENVIEW, ILL. Ivan R. Peterson, 2111 Dewes Ave., Glenview, Ill., archt.

† Douglas-Cloud Co., 1017 Penobscot Bldg., Detroit, Mich., LB $587,450, conversion to TUBERCULOSIS BLDG. No. 1, Veterans Administration Hospital, DEARBORN, MICH. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Oct. 20. CD 9/10.

▲ Palmer Smith Co., 415 Brainard St., Detroit, Mich. CA $1,217,412. general contract HIGH SCHOOL, swimming pool, 2 section GYMNASIUM, ALLEN PARK, MICH. Village, Wm. C. Harris, supt. Schools, 7445 Allen St., Allen Park, Mich. Bids Oct. 6; Awarded Oct. 20. CD 10/16, under LB.

▲ Madison Construction Corp., 600 Woodward Ave., Detroit, Mich. Owner Builds, $3,400,000, 350 single HOMES on 75-acre plot, Shady Knoll, YPSILANTI, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† Tex., Big Spring—HANGAR, etc.—B.A. 11/12—U. S. Eng., Box 1538, Albuquerque, N. M., (A), hangar with shop, $250,000-$350,000, (B) AFB maintenance shop, $250,000-$450,000, (C) utilities, gas, sewers, water, electric, steam, $189,000, (D) paved roads, site parking area, $150,000, Webb Air Force Base. Serial No. Eng-29-005-54-27. Extended date. CD 10/20.

† Tex., Kingsville—TAXIWAY—B.A. 11/25—U. S. Govt., Officer in Charge of Constr., Admin. Bldg. No. 1, Naval Air Station, Corpus Christi, constr. connecting taxiway between North-South field, related work, Naval Auxiliary Air Station, NOY 72220, Spec. 33469. $250,000-$750,000. Extended date. CD 9/30.

† North Dakota—SWITCHES—B.A. 12/1—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Bismarck, Schedule 1, Item 1, three 230,000-volt, 1,200-ampere, 3-pole, selector-type, manually-gang-operated switches; Item 2, four 230,000-volt, 1,200-ampere, 3-pole, manually-gang-operated switches for Bismarck Sub-station, Transmission Div., Missouri River Basin Proj., Inv. No. DS-4067.

† Texas—B.A. 12/1—U.S. Eng., P.O. Box 1229, Galveston, maintenance and repairs to East Floodgates, Colorado River Floodgates, G.I.W.W. Inv. No. CIVENG-41-243-54-33. $100,000-$500,000. CD 6/9/44.

† North Dakota—AUTOTRANSFORMERS—B.A. 12/3—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing three 20,000/26,667/33,333-kva, 220,000-to 115,000-volt, single-phase, class OA/FA/FA or OA/FA/FOA outdoor autotransformers for Jamestown Sub-station, Transmission Div., Missouri River Basin Proj., Inv. No. DS-4069. W. A. Dexheimer, comn.; adv. ENR 11/5.

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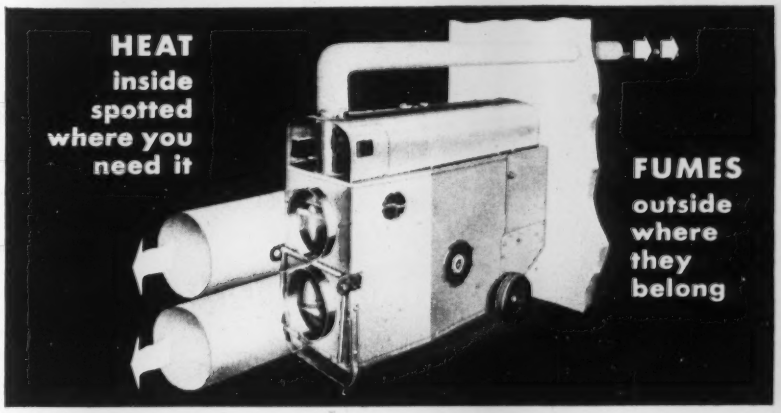

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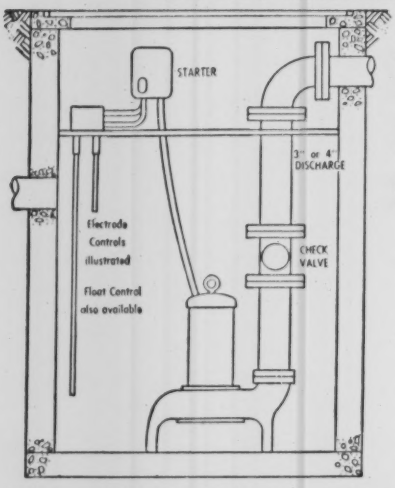

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S. D., Aberdeen—B.A. 12/8—City, concrete curbs and gutters in 24 street imprvt. dists. $65,000.

▲ Kan., Kansas City—RACE TRACK, etc.—Bids Asked—Christopher Enterprises, Inc., 3524 State Ave., race track, grandstand, various facility bldgs. $1,500,000. Crute & O'Bryan, Bennett Bldg., Kansas City, Kan., archts.

BIDS ASKED—BUILDINGS

Tex., San Antonio—SCHOOL—B.A. 11/18—San Antonio Independent Dist., Lavaca and Matagorda Sts., 65,000 sq. ft., masonry Henry Wadsworth Longfellow Junior High School. $600,000. Phelps & DeWees & Simmons, 1501 Majestic Bldg., archts. W. E. Simpson, 945 Milam Bldg., and Gerald M. Baker, 1501 Majestic Bldg., engrs. CD 6/23/52.

▲ Tex., Gainesville—PLANT—Bids Asked—National Supply Co., Gainesville, main plant constr., $3,000,000; machinery and equip. repair shop, $90,000; warehousing constr., $275,000. Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, Mich., archt.-engr. CD 9/2.

SOON LETS CONTRACT—BUILDINGS

Mo., St. Louis—SUPERMARKET—Hampton-Sutherland Investment Co., c/o Gerhardt Kramer Assoc., archts., 9640 Clayton Rd., Zone 24, soon lets contract 1 story, part bsmt., 100x168 ft., brick, steel, supermarket, Hampton Blvd. and Bancroft Ave. Otto Heinicke & Co., 122 N. 7 St., Zone 1, engrs. Kroger Co., 1311 S. 39 St., St. Louis 10, Mo., lessee.

Tex., Houston—PLANT—Gould National Batteries, Inc., 1201 E. Natl Bank Bldg., St. Paul, Minn., soon lets contract 1 story, 43,000 sq. ft. masonry automotive storage battery mfg. plant. $750,000. CD 9/23.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Richard E. Harder Constr. Co., 1518 Sulphur Ave., St. Louis 10, Mo. LB $65,543, est. $70,000, trunk sanitary sewers to connect to University City sys. of McKnight Rd. south of Olive St. Rd., incl. 13,980 lin. ft. 8 and 10 in. vitr. clay or concrete pipe, OLIVETTE, MO. Olivette Sewer Dist. Bd. Trustees, Clarence W. Miller, pres., Town Hall, 9473 Olive St. Rd., Olivette 14, Mo. Bids Oct. 14. CD 10/5.

Frazier-Davis Constr. Co., 1319 Macklind Ave., St. Louis 10, Mo. CA Est. $100,000, alterations, imprvs. to Busch Stadium, Grand Blvd., Dodier St. to Sullivan Ave., ST. LOUIS, MO. Anheuser-Busch Inc., 721 Pestalozzi St., St. Louis 18, Mo., Sverdrup & Parcel, 917 Olive St., St. Louis 1, Mo., engrs.

▲ Dondlinger & Sons Constr. Co., 1206 E. Lincoln St., Wichita, Kan. LB $3,284,500, water treatment plant addns., WICHITA, KAN. City, City Hall, Wichita, Kan. Bids Oct. 13. CD 10/7.

TEXAS—State Hy. Comn., Austin,

Gulf Bitulithic Co., P.O. Box 2572, Houston, Tex., LB $76,743, imprvs. on approach to causeway 0.966 mi. Hy. U.S. 75. Proj. C 500-1-29, Galveston Co. Bids Oct. 21. CD 9/28.

TEXAS—State Hy. Comn., Austin,

John F. Buckner & Sons, P.O. Box 76, Cleburne, Tex. LB $98,451, 0.276 mi. Wichita River bridge and approaches, Hy. Loop 11, Proj. C-43-14-8, Wichita Co. CD 10/5.

W. S. Crawford Co., 5350 Montrose Dr., Dallas, Tex., LB $68,225, 0.106 mi. structures on Hy. FM 38, 64, 79, 128 and 271, Proj. C 749-2-4, C 399-3-7, C 688-2-6, C 735-1-4 and C 690-2-3, Lamar, Delta and Fannin Counties;

Farnworth & Chambers Co., Inc., P.O. Box 74, Houston, Tex., LB $596,138, 0.295 mi. T & NO & GC & SF RR overpass in Beaumont, Hy. U.S. 90, Proj. UGI 56 (6), Jefferson Co. Bids Oct. 20. CD 9/28.

▲ TEXAS—State Hy. Comn., Austin,

Austin Road Co., P.O. Box 1590, Dallas, Tex., LB $370,960, grading, structures, storm sewers, pavement 1.313 mi. Hy. SH 348, Proj. C 686-1-11, Galveston Co.; LB $88,548, grading, structures, base and surf. 7.56 mi. Hy. FM 1988, Proj. S 1864 (1), Polk Co.;

Fred Hall & Son, Valley Mills, Tex., LB $106,805, grading, structures, base and surf. 8.994 mi. HY. FM 712, Proj. S 1618 (1), Hill Co.;

E. E. Hood & Son, P.O. Box 6097, Harlandale Station, San Antonio, Tex., LB $137,888, flexible base and b. conc. 6.788 mi. Hy. SH 90, Proj. F 1084, Brazos and Washington Counties;

King & Gibbins, P.O. Box 7067, Fort Worth, Tex., LB $61,889, grading, structures, base, surf. 8.35 mi. Hy. FM 1709, Proj. S 1536 (1), Tarrant Co.;

Ernest Loyd, P.O. Box 1120, Fort Worth, Tex., LB $128,527, grading, structures, base, surf. 10.673 mi. Hy. FM 1063 and 641, Proj. S 1458 (1) and S 1051 (2), Crosby Co.; LB $159,521, wid'n. flexible base and b. conc. 11.635 mi. Hy. U.S. 277, Proj. C 157-1-21, Baylor Co.

Stephen Luce, 2211 15th St., Vernon, Tex., LB $128,603, grading, structures, base, surf, 10.913 mi. Hy. Fm 126, Proj. S 1010 (3), Jones Co.;

R. W. McKinney, Box 190, Nacogdoches, Tex., LB $125,096, flexible base, shoulders and hot mix b. conc. 10.105 mi. Hy. US 75, Proj. C 93-1-19, Navarro Co.;

Dan Pennington, Grapeland, Tex., LB $62,870, grading, structures, base, surf. 10.374 mi. Hy. FM 624, Proj. S 94 (4), C 989-2-8, Nueces and Jim Wells Counties;

T. R. Vardeman & Son, P. O. Box 485, Nacogdoches, Tex., LB $105,885, grading, structures, base, surf. 6.498 mi. Hy. FM 1798, Proj. S 1637 (1), Rusk Co. Bids Oct. 20. CD 9/28, 10/1, 10/5.

▲ TEXAS—State Hy. Comn., Austin,

Cage Bros., 6959 N. San Pedro St., San Antonio, Tex., LB $298,637, grading, structures, base, surf. 6.201 mi. Hy. FM 157, Proj. R 747-3-7, Tarrant Co.; LB $80,538, grading, structures, base, surf. 8.905 mi. Hy. FM 1473, Proj. S 1789 (1), Bosque Co.;

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M. B. Killian, 4600 Broadway, San Antonio, Tex. LB $125,077, grading, structures, base, surf. 12.934 mi. Hy. FM 877, 81 and 1354, Proj. S 1419 (2), Karnes Co.;

L. H. Lacy Co., 5630 Yale Blvd., Dallas, Tex., LB $204,762, grading, structures, pavement 1.037 mi. Hy. FM 1093, Proj. C 1258-4-2, Harris Co.;

Ernest Loyd, P. O. Box 1120, Fort Worth, Tex., LB $136,477, grading, structures, base, surf. 10.968 mi. Hy. FM 48 and 1268, Proj. S 731 (3), Wheeler and Hemphill Counties;

Menefee Bros. & Alford, P. O. Box 431, Center, Tex., LB $114,380, grading, structures, base, surf. 8.543 mi. Hy. FM 314, Proj. C-1789-1-2, Henderson Co.;

M. E. Ruby, San Marcos, Tex., LB $111,492, grading, structures, base, surf. 8.607 mi. Hy. FM 1985 and 1624, Proj. S 1874 (1), Lee Co.;

Strain & Brown, Inc., P. O. Box 1057, San Angelo, Tex. LB $148,734, grading, structures, base, surf. 7.046 mi. Hy. FM 1610, Proj. V 1531-2-1, Scurry Co.;

Stuckey Constr. Co. & Stephen Luce, P. O. Box 1645, Wichita Falls, Tex., LB $179,600, c. conc. 10.961 mi. Hy. US 70, Proj. C 146-7-6, Wilbarger Co.;

Uvalde Constr. Co., P. O. Box 10286, Dallas, Tex., LB $222,195, grading, storm sewers, T & P underpass and c. conc. 0.661 mi. Hy. US 77, Proj. FG 117 (8) and F 117 (9), Denton Co.;

Ward & Hallman, Tyler, Tex., LB $114,972, grading, structures, base, surf. 5.911 mi. Hy. FM 196, Proj. S 1033 (2), Lamar Co.;

Worth Constr. Co., P. O. Box 531, Fort Worth, Tex., LB $226,984, grading, bridge and c. conc. 1.254 mi. Hy. Access Rd. Proj. AD 5, Contr. 2, Tarrant Co. Bids Oct. 21. CD 9/28 and 10/1.

City, Laredo, Tex. Own Forces. $90,000, some pumping plant imprvs. Myers & Noyes & Assocs., Wilson Bldg., Corpus Christi, Tex., engrs.; $75,000, installing water mains and distr. lines, LAREDO, TEX. Sigler, Clark & Winston, Box 428, Weslaco, Tex., engrs. on both projects.

† **U. S. Eng.**, P. O. Box 1538, 2108 Central Ave. S.E., Albuquerque, N. M., cancelled bids to have been opened about Nov. 19, railroad spur and siding, Holloman Air Force Base. Serial No. ENG-29-005-54-34, ALAMOGORDO, N. M. CD 10/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Lysne Constr. Co.**, Blooming Prairie, Minn. LB $1,261,611 general contract 3 story high SCHOOL, BLUE EARTH, MINN. Bd. Educ., M. Yvonne Russ, clk., Blue Earth, Minn. Bids Oct. 20. CD 9/22.

▲ **Alexander & Kingbay**, 4641 Hiawatha Ave., Minneapolis, Minn., CA $5,000,000, general contract Knollwood Plaza SHOPPING CENTER, on north side of Hy. 7 between Texas Ave. and Minnehaha Creek, ST. LOUIS PARK, MINN. H. Shanedling & Sons, Inc., 2025 Nicollet Ave., St. Louis Park, Minn. Thorshov & Cerny, 400 Metropolitan Bldg., Minneapolis, designer, R. Loewy Corp., 488 Madison Ave., New York, N. Y., archts.

McNearny Realty & Building Co., 8421 Gravoid Rd., Affton 23, Mo. Own Forces. $300,000, nineteen 1 story, 20x40 ft., frame, concrete RESIDENCES, Behr Dr. and Hacker Place south of Timothy Lane, AFFTON (ST. LOUIS 23 P. O.), MO.

Robinson Constr. Co., 5545 West Park, St. Louis 10, Mo. LB $95,274, superstructure 65 ft. high overall, 32x42 ft., masonry block, steel FACTORY, 65 Destrahan St., ST. LOUIS, MO. Mallinckrodt Chemical Works (prime contractor) and F. N. Anderson, proj. engr., 65 Destrahan St., St. Louis, Mo. Bids Oct. 12. CD 10/5.

Merle-Jung, Inc., 5555 West Park, St. Louis 10, Mo. CA 1 story, 85x114 ft., brick, concrete WAREHOUSE, ST. LOUIS, MO. Motor Transportation Co., 3534 Gratiot St., St. Louis 3, Mo. Fred and Francis Nauman, 714 N. Woodlawn St., Kirkwood 22, Mo., archts.

Andill Corp., 8874 Ladue Rd., Ladue 24, Mo. CA 64x213 ft. bottle STORAGE BLDG., 2309 De Kalb St., ST. LOUIS, MO. Griesedieck Bros. Brewery Co., 1920 Shenandoah Ave., St. Louis 4, Mo.

Sebco, Inc., 1011 Currie Ave., Minneapolis, Minn. Owner Builds. $400,000, SHOPPING CENTER, between Minnesota and Phillips Sts. and 37 and 39 Sts., SIOUX FALLS, S. D.

† **Cullum & Whittle**, 4007 Irving Blvd., Dallas, Tex., LB $436,000, inert STOREHOUSES, roads etc. Naval Ammunition Depot, NOY 80192, Spec. 38381, McALESTER, OKLA. U. S. Govt., 8th Naval Dist., U. S. Naval Station, New Orleans, La. Bids Oct. 20. CD 10/13.

▲ **Benson Co., Builders**, 2212 Waugh Dr., Houston, Tex. CA $606,000, 80,000 sq. ft. concrete, exterior of brick and Austin cut stone WAREHOUSE; CA $345,500, concrete, brick and Austin stone exterior OFFICE; $69,000, asphalt-type paved warehouse area and parking center, HOUSTON, TEX. Reader's Wholesale Distributors, Inc., 414 Washington Ave., Houston, Tex. Grand total $1,020,000. CD 8/24.

F. L. Scott & Son, 2402 W. Kings Hy., San Antonio, Tex. CA $576,804, STUDENT UNION BLDG. and SCIENCE addn. SAN ANTONIO, TEX. San Antonio Union Junior College Dist., San Pedro Ave., San Antonio, Tex. Bids Oct. 14, awarded Oct. 22. CD 10/20, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **California**—B.A. 11/19—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., Sch. 1, Item 1 two 90 in. diam. welded-plate-steel outlet pipes for outlet works at Monticello Dam, Solano Proj. Spec. DS 4065. L. N. McClellan, ch. engr. CD 7/31/52.

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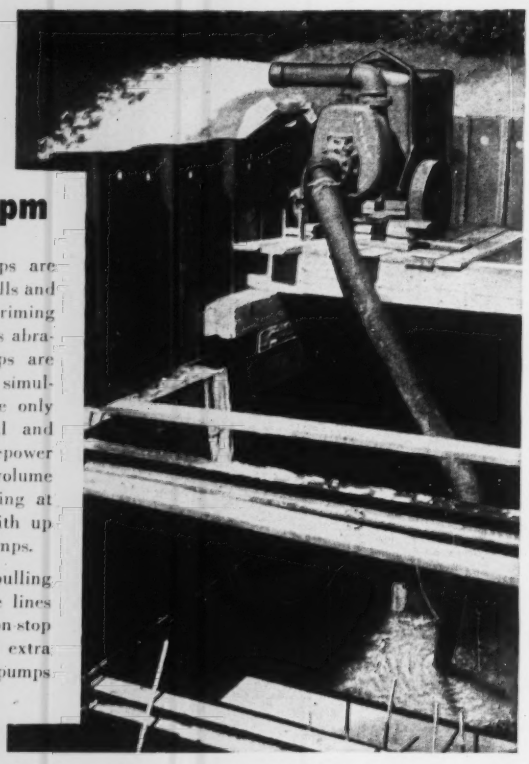

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Idaho, Salmon—B.A. 11/19—City, City Hall, oiling 7.8 mi. city streets in new improvement district. $144,000. CD 10/21.

† Washington—B.A. 12/3—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., one motor control equipment assembly for Eltopia Branch Pumping Plant, Area P-9, Columbia Basin Proj., Spec. DS 4068. L. N. McClellan, ch. engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† WASHINGTON—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland, Ore.

A. H. Beaty Constr. Co., South Bend, Wash., LB, $103,625, clearing, grubbing, grading, draining 6.78 mi. White Salmon River Rd., Proj. S4-A, Klickitat and Skamania Counties. Bids Oct. 20. CD 10/12.

▲ Peter Kiewit Sons' Co., 345 Kieways Ave., Arcadia, and Fred J. Early Jr. Co., Inc., 22124 S. Vermont Ave., Torrance, Calif., CA $2,082,963, Section 1, Unit A, La Cienega and San Fernando Valley Relief Sewer Alternate "B", LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. Bids Sept. 23, awarded Oct. 19. CD 9/30, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Kitchell-Phillips Contractors, Inc., 2706 W. Buchanan St., Phoenix, Ariz., CA, $750,000, electronics research LABORATORY addn., PHOENIX, ARIZ. Motorola, Inc., 4545 W. Augusta Blvd., Chicago, Ill.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Ont., Ottawa—B.A. 11/24—City, N. R. Ogilvie, clk., Bytown Bridge on Sussex St. $400,000. Plans deposit $25. CD 8/21.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Sir Robert McAlpine & Sons Ltd., 36 King St. W., Toronto, Ont., LB, $1,348,656. harbor imprvs. at Toronto harbor head wall, TORONTO, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Oct. 21. CD 10/2.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ John Laing & Son (Canada) Ltd., c/o G. J. Harman, Canadian Bank of Commerce Bldg., Vancouver, B. C., CA, $175,000,000, design and construct INDUSTRIAL DEVELOPMENT incl. factories, wharves, causeways, roads, services, etc. Annacis Island near NEW WESTMINSTER, B. C. Duke of Westminster Estate, G. T. Hardman, Canadian Bank of Commerce Bldg., Vancouver, B. C. CD 5/19.

▲ Bennett-Pratt Ltd., 5 Maple Leaf Dr., Weston, Ont., CA, $1,327,114 pure FOOD building addn., alterations, at Canadian Exhibition grounds, TORONTO, ONT. City, City Hall, Toronto, Ont. Bids Oct. 13, awarded Oct. 20. CD 10/21, under LB.

▲ F. Marquis & Son Ltd., 177 Cremazie St., Quebec City, Que., CA, $7,000,000, 9 story, concrete, steel, brick, stone HOSPITAL addn., BEAUPORT, QUE. Hospital St. Michel Archange, 7 St. Olivier St., Quebec City, Que. CD 9/9.

Main Constr. Co., Regd., 4535 City Hall Ave., Montreal, Que., CA, $175,000, WAREHOUSE and OFFICES, Pare St., MONTREAL, QUE. English Electric Co. of Canada, Ltd., 1411 Crescent St., Montreal, Que. Lazer & Sterini, 5821 Cote des Neiges Rd., Montreal, Que., archts.

Main Constr., Inc., 4535 City Hall Ave., Montreal, Que., LB, $450,000, 3 story, bsmnt., 30,000 sq. ft., rein.-con., structural steel, brick WAREHOUSE, Cote de Liesse Rd., MONTREAL, QUE. Standard Electric Co., 209 W. Craig St., Montreal, Que. Lazar & Sterlin, 5821 Cote des Neiges Rd., Montreal, Que., archts. L. S. Backler, 4838 Fulton Ave., Montreal, Que., engr. CD 11/8/46.

▲ Twentieth Century Housing Corp., 5890 Souart St., Montreal, Que. Owner Builds. $1,500,000. 125 two story, wood, brick, stone HOUSING UNITS on new streets, VILLE ST. LAURENT, QUE. Ben-Ami Shulman, 1421 Mackay St., Montreal, Que., archt.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Morrison-Knudsen Co., Inc., 317 Broadway, Boise, Idaho, CA $2,560,570, est. $2,980,618, roads, streets, parking areas and sidewalks, Inv. 54-5, Eielson Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Sept. 23. CD 9/30, under LB.

U. S. POSSESSIONS

BIDS ASKED—BUILDINGS

▲† Virgin Islands—SCHOOLS—B.A. 1/30—Office of Territories, Dpt. Interior, Lester M. Mark, Contr. Office, Dist. Engr. for Virgin Islands, P. O. Box 479, St. Thomas, Virgin Islands, elementary schools, three at St. Thomas, two at St. Croix and four at St. John. $1,000,000. M. A. Dyer Co., 24 School St., Boston, Mass., engr.-archt.

Proposed Projects

WATER SUPPLY

▲ **Conn., New Haven**—New Haven Water Co., 100 Crown St., New Haven, 200 ft. dam 50 ft. high, concrete, 5 mi. 8x8 ft. horseshoe tunnel, 80 ft. underground from Hammonasset River Reservoir to North Guilford, North Guilford, $8,000,000. Malcolm Pirnie, 25 W. 43 St., New York, N. Y., consult. engr. Clarence Blair Assocs., 100 Crown St., and Joseph A. Navaro, 100 Crown St., engrs.

▲ **Ill., Effingham**—Effingham Co., c/o Bd. Supervs., Court House, creating county water conservancy district to constr. county lake for storage of water for use by farmers and municipalities. $1,250,000.

▲ **Mo., St. Louis**—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 and Market Sts., Zone 3, basin at Chain of Rocks plant; pumping station, installation of pressure conduit from Chain of Rocks to Baden and Bissell's Point stations, $9,000,000; acquisition and constr. all facilities incl. storage facilities to supplement the fluoride concentrations in city water supply, $50,000, Conway B. Briscoe, 312 City Hall, Zone 3, dir. CD 12/5/51.

▲ **Tex., Dallas-North Texas Municipal Water Dist.**, c/o J. C. Cantrell, Republic Bank Bldg., laying 8- to 30-in. water lines, territory is east and northeast of here, $8,000,000; ground water storage facility, $500,000; water filtration plant, $750,000.

† **Alaska, Ketchikan**—Alaska P. Wks., Dpt. Interior, Juneau, 1.3 mi. distr. sys., chlorinator station, 450 ft. timber trestles to serve housing proj. $236,900. W. D. Shannon & Assocs., Skinner Bldg., Seattle 1, Wash., consult. engrs. CD 2/20/53.

† **Alaska, Valdez**—Alaska P. Wks., Dpt. Interior, Juneau, water sys., with 240,000 gal. reservoir and 5 mi. 6- to 10-in. mains. $528,000. Thomas B. Bourne & Assocs. of Alaska, Inc., Anchorage, consult. engr. CD 2/18.

SEWERS, WASTE DISPOSAL

Calif., Brea—City, 401 S. Pomona Ave., $245,000 bond election Dec. 1, Brea-Fullerton Trunk Sewer. CD 8/28/51.

Fla., North Bay Village—Village, sanitary sewerage sys. $250,000. Shinn & Hutcheson, 278 Aragon Ave. Coral Gables, consult. engrs.

Ill., East Dundee—City, sewers and sewage treatment plant, $450,000. Victor Kasser, 202 E. Chicago Ave., Elgin, consult. engr. Consoer Townsend, 351 E. Ohio St., Chicago, Zone 11, assoc. engr. CD 2/10, under LB.

▲ **Ill., Mattoon**—City, City Hall, sewerage systems expansion and imprvs. $1,500,000. CD 7/27/45.

▲ **Kan., Shawnee**—City, c/o Mayor Bryant M. Lowe, sewerage sys. for Turkey Creek area, disposal plant, main sewer line, sub-mains. $2,180,000. C. A. Shackley Eng. Co., Reliance Bldg., Kansas City, Mo., consult. engr.

Mo., Clinton—City, sewerage sys. imprvs. $487,000. J. W. Shikles & Co., Reliance Bldg., Kansas City, Mo., consult. engrs.

Tex., Fort Worth—City, W. O. Jones, city mgr., City Hall, plans by Wyatt C. Hedrick Co., 1200 Texas & Pacific Bldg., incinerator. $500,000. CD 9/17/51.

Wash., Pasco—City, City Hall, primary sewage treatment plant with pumping stations and outfall to Columbia River. $325,000.

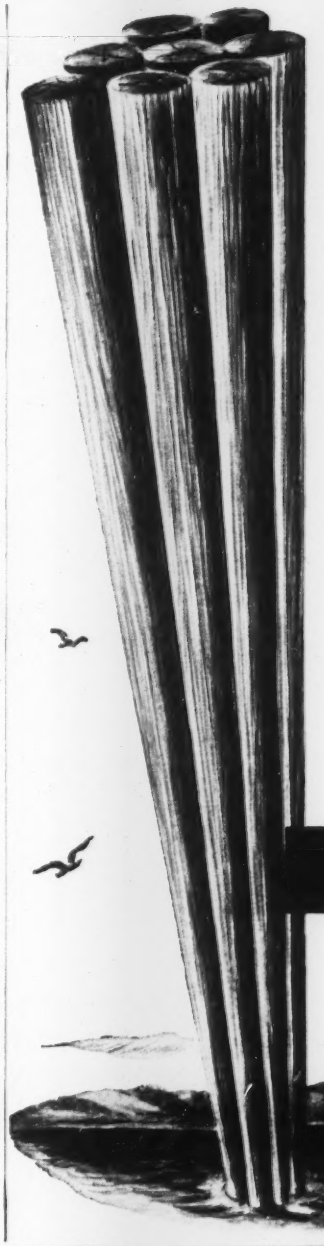
▲ **Alta., Edmonton**—City, Municipal Bldg., sewage disposal plant, 72 in. outfall sewer. $1,500,000. Gore & Storrie, 1130 Bay St., Toronto, Ont., consult. engrs. CD 10/29/51.

BRIDGES

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Fitchburg—reconstr. Depot Square, reconstr. bridge over Boston & Maine R.R. and Broad St., wid'n. square by cutting off corner of American House Hotel, $375,000.

bridge over Baker Brook, $90,000.



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Tex., Dallas—City, City Hall, Main and Harwood Sts., connecting underpass at Texas & Pacific Ry. crossing, Spring, Dolphin and Hatcher Sts. $282,000. A. J. Boynton & Co., Wholesale Merchants Bldg., consult. engrs. CD 2/2/50.

STREETS AND ROADS

Mich., Flint—Genesee Co. Bd. Rd. Comrs., Flint, grading, drainage, sand and subbase and gravelling, surf. 15.6 mi. parts of Duffield, Bray, Perry, Center, Bristol, Hill, Van Slyde and Baldwin Rds. $350,000. J. T. Sharpensteen, 211 W. Oakley St., co. engr. CD 11/26/51.

Okla., Claremore-Rogers Co., Claremore, voted bonds Oct. 13, four lane access hy. to Claremore, $225,000. G. H. Bittle, Capitol, Oklahoma City, Zone 5, engr. CD 9/23.

Okla., Oklahoma City—City, City Hall, widen, resurface 2 mi. N.W. 10 St. from Penna. to Portland Sts. $245,000. Hudgins, Thompson & Ball, 1100 W. Main St., consult. engrs.

▲ **W. Va., Charleston**—City, City Hall, $3,500,000 bond election Nov. 7, incl. opening Dickinson St. from Quarrier to Virginia Sts., $375,000; opening and extending Brown St. from Quarrier to Randolph Sts., incl. bridge across Elk River, $1,775,000; extending Alderson St. from edge of Brown property to make a connection with Laidley St. at Lee, $100,000; opening Seventh Ave. from Adams to Virginia St. with necessary widening to Florida St., $250,000. CD 4/8.

▲ **Alaska, Ketchikan**—City, City Hall, exten. Water and Tongass Sts. for waterfront arterial with trestles, bulkheads, etc. $1,332,000. R. M. Murray, 908 Seventh Ave., Seattle 1, Wash., consult. engr. CD 12/2/49.

EARTHWORK, WATERWAYS

Ariz., Phoenix—Aqua Fria Soil Conservation Dist., Phoenix, 270 sq. mi. drainage imprvs. in White Tanks, Maricopa Co., $300,000.

▲ **Arkansas**—Franklin County Soil Conservation Dist., Ozark, and Magazine Soil Conservation Dist., Booneville, 263 sq. mi. drainage imprvs. in Six Mile Creek, Logan and Franklin Counties $1,612,000.

▲ **Calif., Camarillo**—Calleguas Soil Conservation Dist., Camarillo, imprv. 325 sq. mi. drainage Calleguas Creek, Ventura and Los Angeles Counties. $1,500,000.

Calif., Lakeport—Big Valley Soil Conservation Dist., Lakeport, 35 sq. mi. drainage imprvs. in Adobe Creek Lake Co. $300,000.

▲ **Calif., Oakland**—Alameda County Flood Control Dist., Court House, voted bonds, flood control projects in Districts: Zone 3-A, $3,639,000; Zone 4, $374,000; Zone 6, $1,743,000.CD 9/24.

▲ **Calif., Walnut Creek**—Contra Costa Soil Conservation Dist., Walnut Creek, 125 sq. mi. drainage imprvs., Walnut Creek, Contra Costa Co. $2,200,000.

Ga., Elberton—Broad River Soil Conservation Dist., Elberton, 56 sq. mi. drainage imprvs., north fork of Broad River, Stevens and Franklin Counties, $400,000.

Idaho, Eagle—Dry Creek Soil Conservation Dist., Eagle, imprv. 70 sq. mi. drainage in Dry Creek, Ada and Boise Counties, $650,000.

Illinois—Adams County Soil Conservation Dist., Quincy, and Pike County Soil Conservation Distr., Pittsfield, 77 sq. mi. drainage imprvs. in Hadley Creek, Pike and Adams Counties, $680,000.

Illinois—Warren County Soil Conservation Dist., Monmouth, and Henderson County Soil Conservation Dist., Biggsville, 18 sq. mi. drainage imprs. in Old Tom Creek, Warren and Henderson Counties. $213,000.

Ill., Bloomington—McLean County Soil Conservation Dist., Bloomington, 67 sq. mi. drainage imprvs. in Money Creek, McLean Co. $236,000.

Ia., LeMars—Plymouth County Soil Conservation Dist., LeMars, 21 sq. mi. drainage imprvs. in Floyd River tributaries Upper Plymouth Creek and Orange City watershed, Plymouth and Sioux Counties. $500,000.

Ia., Malvern—Mills County Soil Conservation Dist., Malvern, 17 sq. mi. drainage imprvs. in Mule Creek $350,000.

Kan., Hiawatha—Brown County Soil Conservation Dist., Hiawatha, 44 sq. mi. drainage imprvs. in Little Delaware-Mission Creeks, Brown, Jackson and Atkinson Counties. $540,000.

Kan., Marysville—Marshall County Soil Conservation Dist., Marysville, 26 sq. mi. drainage imprvs. in Snipe Creek, Marshall Co. $460,000.

Kan., Osage—Osage County Soil Conservation Dist., Osage, 33 sq. mi. drainage imprvs. in Switzler Creek, Osage Co. $250,000.

Ky., Compton—Wolfe County Soil Conservation Dist., Compton, 93 sq. mi. drainage imprvs. in upper Red River, Morgan and Wolfe Counties, $400,000.

Ky., Hardinsburg—Breckenridge County Soil Conservation Dist., Hardinsburg, 39 sq. mi. drainage imprvs. in north fork of Rough River, Breckenridge Co., $265,000.

Ky., Shelbyville—Shelby and Spencer Counties Soil Conservation Dist., Shelbyville, 27 sq. mi. drainage imprvs. in Plum Creek, Shelby, Spencer, Jefferson and Bullitt Counties. $250,000.

Ky., Stanford—Lincoln County Soil Conservation Dist., Stanford, 25 sq. mi. drainage imprvs., Upper Green River, Lincoln Co. $250,000.

Minn., Spring Valley—West Fillmore Soil Conservation Dist., Spring Valley, 38 sq. mi. drainage imprv. in East Willow Creek, Fillmore Co. $330,000.

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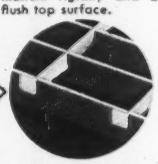

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Mont., Miles City—Plymouth County Soil Conservation Dist., Rensselaer County Soil Conservation Dist., and Kinsey Irrigation Dist., Miles City, 50 sq. mi. drainage imprvs. in Mustel Creek. $300,000.

Nebraska—Red Willow County Soil Conservation Dist. and Frontier County Soil Conservation Dist., Curtis, 49 sq. mi. drainage imprvs., Dry Creek, Red Willow and Frontier Counties. $390,000.

▲ **Nebraska**-Salt-Wahoo Watershed Assoc., Lancaster County Soil Conservation Dist. and Six-County Soil Conservation Dist. Coordinating Committee, Lincoln, imprv. 179 sq. mi. drainage in Upper Salt-Swedeburg tributaries of Salt Creek. $1,800,000.

Neb., Beatrice—Gage County Soil Conservation Dist., Beatrice, 80 mi. drainage imprvs., Indian Creek, Gage and Lancaster Counties. $500,000.

Neb., Syracuse—Otoe Soil Conservation Dist. and East Brownell Watershed Assoc., Syracuse, 24 sq. mi. drainage imprv., Brownell Creek. $400,000.

New Jersey—Warren and Sussex County's Soil Conservation Dist., Belvidere, 108 sq. mi. drainage imprvs. in Pequest River above USGA Gaging Station, Sussex and Warren Counties. $500,000.

N. M., Capitan—Upper Hondo Soil Conservation Dist., Capitan, drainage imprvs. in tributaries of Upper Hondo River, Lincoln and Otero Counties. $750,000.

N. M., Santa Fe—Santa Fe-Sandoval Soil Conservation Dist., Santa Fe, imprv. 75 sq. mi. drainage in Sandia Mountain Tributaries and Bernalillo Watershed, Sandoval and Bernalillo Counties. $500,000.

N. Y., Norwich—Chenango County Soil Conservation Dist., Norwich, 26 sq. mi. drainage imprvs., Great Brook. $250,000.

North Carolina—Middle Yadkin Soil Conservation Dist., Salisbury and Catawba Soil Conservation Dist., Newton, 103 sq. mi. drainage imprvs. in Third Creek, Alexander, Iredell and Rowan Counties. $500,000.

North Dakota—West Pembina County Soil Conservation Dist., Cavalier, East Pembina County Soil Conservation Dist., Cavalier, and Eastern Cavalier Co. Soil Conservation Dist., Langdon, 390 sq. mi. drainage imprvs., Tongue River, Cavalier and Pembina Counties. $600,000.

O., Lancaster—Fairfield Soil Conservation Dist., Lancaster, 33 sq. mi. drainage imprvs. in Upper Hocking River, incl. Hunters Run. $400,000.

Oklahoma—Caney Valley Soil Conservation Dist., Bartlesville, and Kansas-Oklahoma Caney Watershed Council, Havana, 52 sq. mi. drainage imprvs. in Double Creek, Washington and Osage Counties. $515,000.

S. C., Easley—Pickens Soil Conservation Dist., Easley, 123 sq. mi. drainage imprvs. in Twelve Mile Creek. $500,000.

Texas—McLennan County Soil Conservation Dist., Waco, and Central Texas Soil Conservation Dist. 509, Temple, 103 sq. mi. drainage imprvs. in Cow Bayou, McLennan and Falls Counties. $462,000.

▲ **Washington**—Pacific Power & Light Co., 920 S.W. 6 St., Portland 4, Ore., 2 hydro-dams on Lewis River above mouth of Swift Creek and 11 mi. upstream with addnl. generators at Yale and Merwin dams downstream. $45,000,000.

Wash., Walla Walla—Walla Walla Soil Conservation Dist., Walla Walla, 85 sq. mi. drainage imprvs. in Spring Creek, Walla Walla Co. $700,000. CD 6/29.

Wash., Wenatchee—Wenatchee-Entiat Soil Conservation Dist., Wenatchee, 85 sq. mi. drainage imprvs. in Mission Creek, Chelan Co., $809,000.

Wis., Viroqua—Vernon County Soil Conservation Dist., Viroqua, 120 sq. mi. drainage imprvs. in west fork of Kickapoo River, Vernon and Montrose Counties. $500,000.

AIRPORTS

▲† **Wis., Milwaukee**—JET RESERVE TRAINING CENTER—U. S. Eng., 428 Federal Bldg., jet reserve training center at General Mitchell Field. $9,000,000.

N. B., Moncton—BARRACKS, etc.—Defence Construction Ltd., 1032 Gottingen St., Halifax, N. S., 2 story barracks, for R. C. A. F., at Moncton Supply Depot, $500,000. C. J. Connolly, c/o owner, regional engr.

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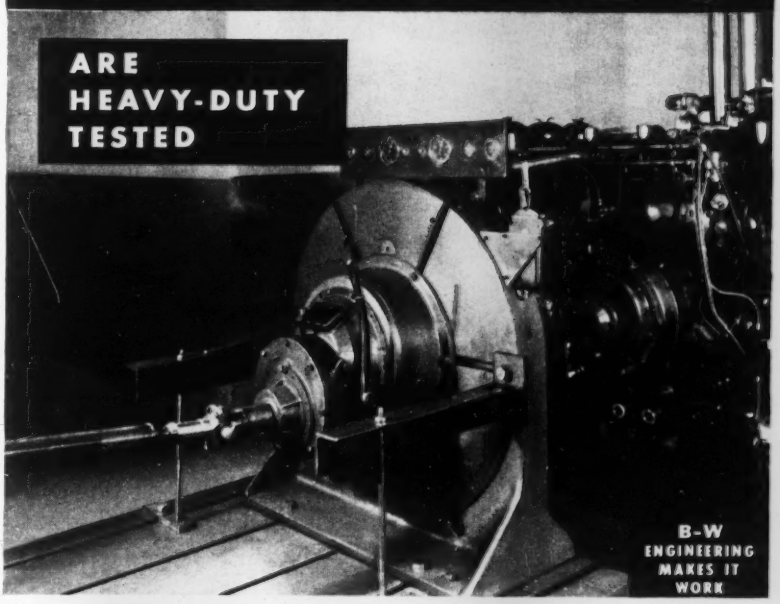

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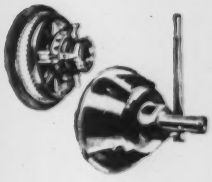

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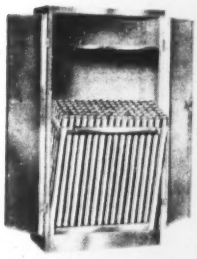

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LATIN AMERICA

▲ **Mexico, Ziracuaretiro**—Nacional Financiera, V. Carranza, 25, Mexico City, plans paper factory. $1,500,000.

PUBLIC BUILDINGS

Colo., Golden—SCHOOLS—Jefferson County School District No. R-1, Golden, plans by John K. Monroe, 400 Security Bldg., Denver, 2 elementary schools, W. 6th and Pierce Sts. and W. 52 and Ammons Sts. $555,000. CD 10/23/52. Ralph D. Patterson, 1707 Gilpin St., Denver, consult. engr.

▲† **D. C., Wash.**—GALLEY OF ART—Smithsonian Institute, 10 and Independence Ave. S.W., plans by Saarinen, Swanson & Saarinen, W. Long Lake Rd., Bloomfield Hills, Mich., Smithsonian Galley of Art, Independence Ave., Jefferson Dr., 4 and 7 Sts. S.W. $20,000,000. CD 10/26/45.

▲ **Ia., Fort Dodge**—SCHOOL—Bd. Educ., Fort Dodge, defeated $1,600,000 bonds, schools. F. E. Griffith, Fort Dodge, archt. CD 9/29.

Kan., Overland Park—SCHOOL—Community School Dist. of Overland Park and Hickory Grove No. 10, voted $697,000 bonds Oct. 10, elementary school and small school, D. R. Hollis, Overland Park, archt.

▲ **Kan., Wichita**—SCHOOL—Bd. Educ. plans by Hibbs, Robinson & Pettit, 519 S. Broadway, 92,000 sq. ft. L. W. Mayberry Intermediate School, $1,300,000. CD 4/21.

▲ **Ky., Louisville**—HOSPITAL—City, 303 E. Chestnut St., plans by Samuel Hannaford & Sons, Dixie Terminal Bldg., Cincinnati, O., and Jos. H. Kilbrook, assoc. archt., Starks Bldg., improv. general hospital. $3,000,000. CD 5/15.

▲ **Mich., Lansing**—SCHOOL—City, Bd. Educ., Harold Andrews, chn. Bldg. Comn., 419 N. Capitol St., high school 50 acres site, Holmes Rd., $1,000,000. CD 12/14/45.

▲ **Mich., Niles**—SCHOOL—City, Bd. Educ., voted $3,600,000 bonds Oct. 15, brick, steel, concrete high school, elementary school, elementary school addn.

Mich., Sturgis—SCHOOLS—City, Bd. Educ., voted bonds elementary school, school addn., remodeling high school, $590,000.

Minn., Lauderdale—SCHOOL—Bd. Educ., Independent School Dist. No. 3, Ramsey Co., T. C. Schultz, clk., voted $840,000 bonds Sept. 29, school addn., improv. Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, archts.

Minn., North St. Paul (Br. St. Paul)—SCHOOL—Bd. Educ., R. Engwer, clk., voted $1,500,000 bonds Oct. 13, high school addn., grade school, $500,000. E. D. Corwin, E .818 First National Bank Bldg., St. Paul, archt.

▲ **Mo., Independence**—COURT HOUSE—Jackson Co., c/o Ray W. Niles, chn. Engineering Board Comn., Court House, plans by Alonzo Gentry, 4 W. 13 St., Kansas City, Mo., 2nd court house, $610,094; improv. present court house, $516,120.

Mo., Kansas City—COURT HOUSE—Jackson Co., Court House, Independence, plans by Alonzo Gentry, 4 W. 13 St., Kansas City, Mo., court house addn., improvs. $958,860.

▲† **Mo., St. Louis**—ORDNANCE PLANT—U.S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., plans by Russell & Axon, engrs.-archts., 408 Olive St., St. Louis, Zone 2, addnl. constr. and rehabilitation of Bldgs. 102 and 2 hazardous area of St. Louis Ordnance Plant vicinity of 4300 Goodfellow Blvd. Total est. $13,000,000. CD 2/9.

▲ **N. Y., Tarrytown**—SCHOOLS—Union Free School Dist. 1, Tarrytown, plans by Perkins & Will, 309 W. Jackson St., Chicago, Ill., high school, 36-acre tract on North Broadway, $2,000,000; plans by Robert A. Green, Tower Hill St., 2 elementary schools, 1 on North Broadway and other at Tappan Hill, $1,250,000. CD 7/23/51.

O., Mayfield Heights—SCHOOL—Mayfield Heights City School Dist., H. A. Scheetz, supt., SOM Center and Mayfield Rds., school and school addns. $795,000.

Pa., Williamsport—SCHOOL—Williamsport City School Dist., Williamsport, plans by D. H. Grootenboer, 29 N. 3rd St., elementary school. $600,000. CD 5/16/47.

Tex., Birdville—SCHOOL—Birdville School Dist., c/o W. G. Thomas, supt., 3120 Carson St., Fort Worth, voted bonds, elementary school and industrial shop for high school. $850,000. CD 12/13/51.

▲ **Wash., Seattle**—OFFICE—State Employes Retirement System, 215 E. 5 St., Olympia, plans by Harmon, Pray & Detrich, Lloyd Bldg., Zone 1, office bldg. $4,000,000. CD 2/11.

▲ **Wis., Brookfield**—SCHOOL—Union Free High School District No. 1, R 2, Box 124A, Pewaukee, plans by Grassold & Johnson & Assoc., 734 N. Jefferson St., Milwaukee, Zone 2, and Perkins & Will, 309 W. Jackson St., Chicago, Ill., high school, $1,602,000.

▲† **Alaska, College**—FOOD SERVICE, etc.—Alaska P. Wks., Dpt. Interior, Juneau, plans by Foss, Malcolm & Olson, Juneau, 2 story, rein.-con., food service bldg., $600,000; plans by E. B. Crittendon, Anchorage, 2 frame apartments, $435,000, at University of Alaska. CD 2/18/53, and 7/2/51 respectively.

† **Alaska, Cordova**—SCHOOL—Alaska P. Wks., Dpt. Interior, 2 story school. $675,000. Thomas B. Bourne & Assocs. of Alaska, Inc., Anchorage, consult. engr. CD 218.

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Alaska, Fairbanks—SCHOOL—School Bd., Fairbanks, plans by L. Linck, Fairbanks, 1 story, rein.-con., steel, masonry grade school. $600,000. CD 9/30.

† **Alaska, Kodiak**—HIGH SCHOOL—Alaska P. Wks., Dpt. Interior, Juneau, plans by Johnson & Botesch, 1st Natl. Bank Bldg., Everett, Wash., 1 story, rein.-con. high school addn. $600,000. CD 2/18.

Alaska, Seward—HIGH SCHOOL—School Bd., Seward, rein.-con., masonry high school. $951,000. Thomas B. Bourne & Assocs. of Alaska, Inc., Anchorage, consult. engr. CD 9/30.

† **Alaska, Sitka**—SCHOOL—Alaska P. Wks., Dpt. Interior, Juneau, plans by Johnson & Botesch, 1st Natl. Bank Bldg., Everett, Wash., rein.-con. school addn. $662,000. CD 2/18.

† **Alaska, Wasilla**—SCHOOL—Alaska P. Wks., Dpt. Interior, Juneau, plans by Foss, Malcolm & Olson, Juneau, 2 story, rein.-con. school addn. $500,000. CD 9/30.

COMMERCIAL BUILDINGS

▲ **Calif., Mill Valley**—SEMINARY—Golden Gate Baptist Theological Seminary, Harold K. Graves, pres., 1908 Addison Ave., Berkeley, plans by John Carl Warnecke, AIA, 507 Howard St., San Francisco, seminary building program, on 125-acre site, incl. chapel, administration, academic, library, dormitories, housing groups, kindergarten buildings, Golden Gate Theological Seminary, Strawberry Point. $10,000,000.

Ill., Aurora—CHURCH—St. Joseph's Church, High St., plans by Wm. F. Bernbrock, 5 Ave. Bldg., Moline, 1½ story, brick, limestone church. $500,000.

▲ **Ill., Chicago**—APARTMENT—J. J. James, 6030 N. Sheridan Blvd., Chicago, plans by Shaw, Metz & Dolio, 208 S. LaSalle St., Chicago 4, Ill., 12 story, 115-unit apartment, 6118 Sheridan Blvd. $1,500,000.

▲ **Ill., Chicago**—DORMITORY—Loyola University, 6525 Sheridan Rd., plans by Barry & Kay, 53 W. Jackson Blvd., Zone 4, 3 story dormitory. $1,200,000. CD 6/26/52.

▲ **Ill. East St. Louis**—SHOPPING CENTER—Shop City, Inc., c/o A. J. Molasky, 8300 Amherst Ave., University City, St. Louis 5, Mo., shopping center, incl. department store, supermarket, national chain store units, medical center and large parking area, at 43 and State Sts. $1,000,000.

▲ **Mass., Jamica Plain**—TECHNICAL SCHOOL—Don Bosco Trade School, 94 Horace St., East Boston, plans by Valtz & Kimberly, 820 Lynn Fells Parkway, Melrose, masonry, rein.-con. technical school. $1,000,000.

▲ **Mass., Milton**—FONTEBONNE ACADEMY—Congregation of Sisters of St. Joseph, Rev. Mother Euphrasi Mother Superior, 303 Adams St., Milton, plans by Chester F. Wright, 861 Main St., Waltham, brick, steel, Fontebonne Academy. $1,250,000.

▲ **Mich., St. Joseph**—STORE—Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill., 2 story brick, steel department store, W. Main St. $1,100,000.

▲ **Mo., Grandview**—LIBRARY—Truman Library Corp., c/o Tom L. Evans, secy., 125 E. 31 St., Kansas City, Mo., plans by Alonzo H. Gentry, 4 W. 13 St., Kansas City, Mo., and Neild & Somdal Assoc., Texas Eastern Bldg., Shreveport, La., 1 story, bsmnt., stone library and office, U.S. 71 and Blue Ridge Blvd. $1,750,000. CD 12/31.

Mo., St. Charles—SCHOOL—Committee c/o Msgr. A. T. Strauss, pastor, St. Peter's Catholic Parish and Rev. James V. Fallon, S.J., pastor St. Charles Borromeo Parish, co-chn., 324 S. Third St., high school on 41 acre site on Elm St. west of city limits. $750,000.

▲ **Mo., St. Louis County**—HOTEL, etc.—Samuel Rich, 7649 Delmar Blvd., University City, Zone 5, 1 and 2 story, U-shaped hotel, shops, swimming pool, 11 acre tract east side of Lindbergh Blvd. north of Long Rd. $1,000,000.

▲ **N. H., Nashua**—SHOPPING CENTER—Howard R. Flanders, Daniel Webster Hy., shopping center. $10,000,000. Hayden, Harding & Buchman, 810 Park Square Bldg., Boston, Mass., engrs.

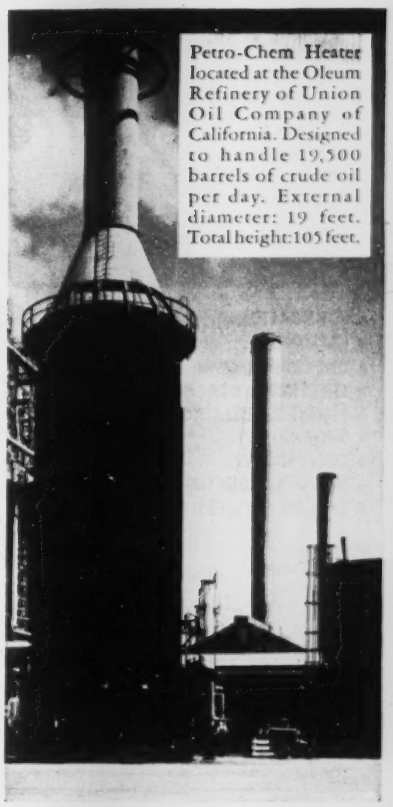
▲ **N. Y., New York**—SCHOOL, etc.—Church of Holy Cross, 600 Sound View Ave., Zone 60, plans by Frederick H. Voss, 101 Park Ave., Zone 17, 3 story school and convent, Theriot Ave., northeast corner of Randall Ave. $1,000,000.

Okla., Tulsa—SYNAGOGUE—Israel Congregation, Louis Pug Myers, pres., S. Rockland Ave. and E. 16 St., plans by Percival Goodman, 40 E. 49 St., New York, N. Y. and Vance Kershner (assoc. archt.), 24 E. 18 St., 2 story brick, steel, Temple Israel (synagogue), air-conditioning. $650,000.

▲ **Tex., Austin**—OFFICE—Plymouth Insurance Co., Littlefield Bldg., plans by Kuetine, Brooks & Barr, Perry-Brooks Bldg., 6 story, 45,000 sq. ft. masonry office addn. $1,000,000.

▲ **Tex., Dallas**—DWELLINGS—Wiley Roberts & Sons, 1922 W. Jefferson St., 16 stone, brick veneer dwellings, concrete slab fdn., central heating, $345,100; 9 masonry dwellings, concrete slab fdn., air-conditioning, etc. $340,000; 18 brick dwellings, concrete slab fdn., air-conditioning, $432,000; 8 brick dwellings, concrete slab fdn., $300,000; 10 stone veneer dwellings, concrete slab fdn., $325,000; in an area of Kessler Woods, Stevens Park, Kessler Park, Oak Cliff.

Tex., Fort Worth—SHOPPING CENTER—The Fair Development Corp., The Fair Bldg., plans by Charles E. Armstrong, 300 First Life Bldg., Fair West Shopping Center, Group No. 2, approx. 50,000 sq. ft., 1 story, masonry constr. $500,000.



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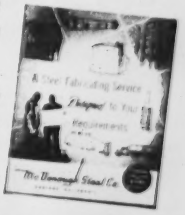

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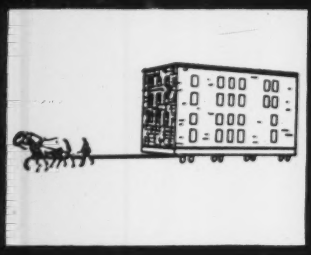

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Va., Norfolk—MOTEL—Dr. Dudley Cooper, 431 Granby St., plans by Lublin, McGaughey & Assocs., 21 and Llewellyn Ave., 100-unit 2 story masonry motel, $500,000.

▲ Wash., Seattle—CLUB—Washington Athletic Club, 6 Ave. and Union St., plans by W. J. Bain & H. Overturf, 700 Marion St., 4 story, 60x210 ft. club bldg. addn. $1,500,000.

Wash., Spokane—SHOPPING CENTER—Western Realty & Holding Co., W. 1017 Riverside, plans by C. G. Tollefson, W. 1017 Riverside, 1 story, bsmnt. 64,000 sq. ft., rein.-con. shopping center. $700,000.

Que., Quebec City—HOTEL—Mde. J. Drapeau, c/o Hotel Clarendon, 17 Ste. Anne St., plans by A. Dufresne, 505 Royale Ave., Beauport, 8 story, 85x105 ft. hotel, on site of Lorraine Hotel and Estate Legare Desjardins Buade and Ste. Anne Sts., $600,000.

INDUSTRIAL BUILDINGS

Mich., Detroit—FOUNDRY—Detroit Brass & Malleable Works, Charles Wisner, 100 S. Campbell St., 1 story, brick, concrete foundry unit, $500,000.

▲ Mich., Lansing—PLANT—Motor Wheel Corp., M. F. Cotes, pres., 735 E. Saginaw St., 1 story ordnance plant, $2,000,000.

Mo., Overland (St. Louis 14 P. O.—WAREHOUSE and OFFICE—Fred P. Rapp, 1450 S. Vandeventer Ave., St. Louis, Zone 10, plans by Rime A. Dusard, 9215 Ladue Rd., Ladue, Zone 24, 1 story, brick, masonry, steel, concrete 100,000 sq. ft. warehouse and office, incl. 8,000 sq. ft. refrigerated area, railroad spur track, loading docks Page Ave. and Watlon Rd. $750,000.

▲ Neb., Lincoln—GRAIN ELEVATOR—West Central Cooperative Grain Co., Grain Exchange Bldg., Omaha, grain elevator addn. $1,500,000.

Okla., Enid—GRAIN STORAGE ELEVATOR—W. B. Johnson Grain Co., Enid, 2,000,000 bu. concrete grain storage elevator. $700,000. Horner & Wyatt, Dwight Bldg., Kansas City, Mo., consult. engrs.

Okla., Sand Springs—MILL—Sheffield Steel Co., Sand Springs, mill addn. $500,000. W. W. Shield, c/o Armco Steel Corp., 1939 Armco Ave., Middletown, O., engr.

▲ Ore., Milwaukie—WAREHOUSE—Oregon Liquor Control Comn., 2505 S.E. 11 St., Portland, plans by Glenn L. Stanton, Concord Bldg., Portland, and W. I. Williams, Salem, warehouse. $1,100,000.

▲ S. C., Moncks Corner—GENERATING PLANT—South Carolina Public Service Auth., Moncks Corner, steam generating plant, $10,000,000.

Tex., Laredo—POWER PLANT—Central Power & Light Co., 120 N. Chaparral St., Corpus Christi, doubling capacity existing electric power plant. $750,000. M. L. Lovelady, c/o owner, ch. engr. CD 9/16.

▲ Utah, Moab—URANIUM DEVELOPMENT—Utex Exploration Comp., Moab, uranium development. $3,000,000.

▲ Alta., Edmonton—OIL REFINERY—McColl-Frontenac Oil Co., 360 St. James St. W., Montreal, Que., oil refinery expansion. $4,000,000.

Ont., Toronto—FACTORY WAREHOUSE—Oshawa Wholesale Ltd., 30 Market St., plans by Shore & Moffat, 79 Queen St. E., 2 story, 300x400 ft., concrete, brick, concrete block, steel, factory warehouse in Etobicoke, $600,000.

UNCLASSIFIED

Illinois—RURAL DISTRIBUTION LINES—Monroe County Electric Co-operative, Waterloo, 76 mi. rural distr. lines and sys. imprvs., Monroe Co. $363,000.

▲ Mich., Detroit—STADIUM—City, Herman Browe, deputy supt. Schools, 1354 Broadway, concrete East-side Stadium, Mack and Connor Sect., $500,000; concrete, steel Westside Stadium, MacKenzie-Cooley Ave. area, Greenfield and Southfield Sts. between Schoolcraft and Plymouth Rds. $500,000. George R. Thompson, Guardian Bldg., city engr. CD 3/2/53.

Okla., Ada—TELEVISION STATION—Eastern Oklahoma Television Co., c/o KADA Broadcasting Co., North Broadway, television station, $418,000.

Texas—RURAL DISTRIBUTION LINES—Bowie Cass Electric Co-operative, Douglasville, 219 mi. rural distr. lines and sys. imprvs., Bowie and Cass Counties. $635,000.

▲ Texas—GAS PIPE LINE—Arkansas-Louisiana Gas Co., Slattery Bldg., Shreveport, La., 45 mi. 14 in. welded joint gas pipe line from near Waskom to owners dehydration plant, near Longview, $875,000; booster station, near Waksom, Harrison Co., $200,000. CD 4/21/49.

▲ Texas—RURAL DISTRIBUTION LINES, etc.—Bailey County Electric Co-operative Assn., Muleshoe, 114 mi. rural distr. lines, 2 sub-stations and tie lines, Bailey Co. $1,150,000. H. N. Roberts & Assocs., 1310 Avenue Q, Lubbock, consult. engrs. CD 8/27/52.

Wis., Winona (P. O. Winona, Minn.)—TERMINAL DOCK—Sterling-Midland Coal Co., 8 S. Michigan St., Chicago, Ill., barge-rail terminal dock, $500,000.

† Alaska, Anchorage—UTILITIES—Alaska P. Wks., Dpt. Interior, Juneau, utilities to serve Tiemagain Home Proj. of Alaska Housing Auth. $603,000. General Eng. Co., 4010 Stone Way, Seattle 3, Wash., consult. engr. CD 2/19.

† Alaska, Ketchikan—UTILITIES—Alaska P. Wks., Dpt. Interior, Juneau, utilities to serve Lloyd Homes Housing Proj. of Alaska Housing Auth. $645,000. G. M. Heinsen, Ketchikan, consult. engr. CD 2/18.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
November 10 Massachusetts

BIDS ASKED—BUILDINGS

Conn., Canton—SCHOOL—B.A. 11/18—Town. Mrs. W. T. Bissell, chn. Bd. Educ., Collinsville, high school addn. $650,000. Carl J. Malmfeldt & Assoc., 36 Pearl St., Hartford, archt. CD 6/11.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **B. Perini & Sons, Inc.,** 73 Montwait Ave., Framingham, Mass., CA earth dam embankments and riprapping;

Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho, CA all concrete masonry constr. on this proj., for hydro-electric plant, Upper Fifteen Mile Falls on Connecticut River, Littleton, NEW HAMPSHIRE. Total est. $45,000,000. Contract Awarded by Ebasco Services, Inc., 2 Rector St., New York, N. Y. for New England Power Co., 441 Stuart St., Boston, Mass. Awarded Oct. 21. CD 4/28, under CA.

† **Platt Constr. Co., Inc.,** 99 First St., Cambridge, Mass. LB $776,000, est. $1,000,000. 2 airmen's dormitories, mess, admin. bldg., Hanscom Air Force Base, ENG-19-016-54-34, BEDFORD, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. William Nelson Jacobs, 438 Park Square Bldg., Boston, Mass., archts. Bids Oct. 22. CD 9/28.

▲† **T. C. Bateson Constr. Co.,** 6800 Denton Dr., Dallas, Tex., LB, $4,329,000, est. $5,000,000, 15 multi-purpose hangars, Westover Air Force Base, ENG-19-16-54-31, CHICOPEE, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Oct. 23. CD 9/16.

BUILDINGS

LOW BIDS AND CONTRACTS

Columbia Constr. Co., 10 Tremont St., Boston, Mass. LB $696,126. E-406 Contr. 1, AUDITORIUM-GYMNASIUM, CLASSROOM bldg., State Teachers College, LOWELL, MASS. State, Dpt. Educ., Lowell State Teacher's College, Lowell, Mass. Bids Oct. 22. CD 10/2.

Anthony P. Miller Constr. Co., Sponsor, 3333 Atlantic Ave., Atlantic City, N. J., Own Forces. $800,000. 200 units, 100 duplex frame Wherry HOUSING, NEWPORT, R. I. Morton Keast, Commonwealth Bldg., Phila., Pa., archt. CD 4/6.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 20 Pennsylvania
STREETS AND ROADS
November 10, 17 Maryland November 19 New York
November 20 Pennsylvania

BIDS ASKED—BUILDINGS

▲ **N. Y., Woodbury Twp.**—HIGH SCHOOL—B.A. 11/19—Bd. Educ., Central School Dist. 1, Towns of Monroe, Woodbury, Blooming, Grove, Chester and Tuxedo, School Bldg., Monroe, Junior Senior High School. $1,470,000.

▲ **N. Y., Bayside**—SCHOOL—B.A. 11/24—Director Bureau of Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, general constr. P. S. 213, south side 67 Ave. between 230 and 233 Sts. $1,580,000. Plans deposit $24. Michael L. Radoslovich, c/o owner, archt.

▲ **N. Y., Bellerose**—SCHOOL—B.A. 11/24—Director Bureau of Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, general constr. P.S. 18, east side 235 Ct. between 87 and Hillside Aves. Est. $1,300,000. Plans deposit $24. Michael L. Radoslovich, c/o owner, archt.

▲ **N. Y., Fresh Meadows**—SCHOOL—B.A. 11/24—Director Bureau of Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, general constr. P.S. 179, north side Peck Ave., east of Horace Harding Blvd. $1,300,000. Plans deposit $24. Michael L. Radoslovich, c/o owner, archt.

▲ **N. Y., Ozone Park**—SCHOOL—B.A. 11/24—Director Bureau of Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, general constr. P. S. 62, south side 97 Ave. between 108 and 109 Sts. Est. $1,350,000. Plans deposit $24. Michael L. Radoslovich, c/o owner, archt. CD 10/28.

Pa., Woodlyn—SUB-STATION—Bids Asked—Phila. Electric Co., 900 Sansom St., Phila., sub-station, $840,000. Leland B. Dyke, c/o owner, engr. CD 8/20.

SOON LETS CONTRACT—BUILDINGS

▲ **N. J., Mahwah**—ASSEMBLY PLANT—Ford Motor Co., Rouge Plant, 3000 Schaefer St., Dearborn, Mich., soon lets contract, brick, steel, glass assembly plant. $30,000,000. Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, Mich., engr and archt. CD 10/8.

▲ **Pa., Norristown**—HOSPITAL—Sacred Heart Hospital, Norristown, soon lets contract hospital addn. $1,250,000. George E. Yundt, 16 S. 6 St., Allentown, archt. CD 10/14.

Pa., Phila.—CENTER—Federation of Jewish Charities, 1511 Walnut St., soon lets contract Neighborhood Center Bldg. $500,000. Louis & Henry Magaziner, 1701 Walnut St., and Thalheimer & Weitz, 1325 Walnut St., archts.

▲ **Pa., Phila.**—WAREHOUSE—Phila. Electric Co., 900 Sansome St., soon lets contract warehouse, $1,250,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg.

E. M. Brown, Inc., 11 Guelich Ave., Clearfield, Pa., LB $237,018, constr. 16,124 ft. crushed aggregate base road with bit. surf. 18 ft. wide, T. R. 973, Hepburn Twp., Lycoming Co.;

Francis A. Canuso & Sons, 173 W. Roosevelt Blvd., Phila., Pa., LB $6,465,149, constr. 18,639 ft. divided hy. of plain c. conc. base with bit. surf. variable in width, one 3 span, I-beam bridge U. S. 1, Roosevelt Blvd., Philadelphia Co.;

Collins & Maxwell, Inc., Easton, Pa., LB $241,737, constr. 4,187 ft. plain c. conc. base with bit. surf., variable in width, T. R. 12, Bethlehem, Northampton Co.;

Gasparini Excavating Co., Inc., 1439 Main St., Peckville, Pa., LB $2,779,593, constr. 21,032 ft. crushed aggregate base road with bit. surf. variable width, T.R. 315-11, Luzerne and Lackawanna Counties;

Rake & Litts, 223 Washington St., East Stroudsburg, Pa., LB $109,286, constr. 7,140 ft. crushed aggregate road base with bit. surf. 20 ft. wide, L. R. 45036 (3), Monroe Co.;

Howard Worthington, Box 95, Line Lexington, Pa., LB $781,586, constr. 35,595 ft. crushed aggregate base road with bit. surf. variable in width, T. R. 29, Montgomery Co.;

C. S. Yoder, 4 Wine St., Uniontown, Pa., LB $352,791, widen. 13,592 ft. existing road with crushed aggregate base and bit. surf. variable in width, T.R. 711, Fayette and Washington Counties. Bids Oct. 23. CD 10/6.

▲ **Edward S. Mando Co.,** 649 S. Gore Blvd., Erie, Pa. CA $347,600, Div. "B";

M. J. Bles Constr. Co., McLean, Va., CA $437,885, Div. "C", CA $341,087, Div. "D";

The Curro Constr. Co., 787 Union Commerce Bldg., Cleveland, O., CA $705,769, Div "E";

Joseph McCormick Co., 1345 W. 10 St., Erie, Pa., CA $322,100, Div. "F", for relief and reinforcing sewers, ERIE, PA. City, City Council Chambers, Erie, Pa. Grand total $2,154,441. Bids Sept. 11. CD 8/17.

BUILDINGS

LOW BIDS AND CONTRACTS

Met Contr. Corp., 50 Court St., Brooklyn 2, N. Y. LB $675,000, P. S. 93 SCHOOL, New York Ave. and Herkimer St., BROOKLYN, N. Y. Bureau Constr., 49 Flatbush Ave. exten., Brooklyn 1, N. Y. Bids Oct. 21. CD 10/20.

▲ **Country Village Homes,** c/o Herman H. York, archt., 90-04 161 St., Jamaica, N. Y. Owner Builds. $2,000,000. 130 HOUSES on tract in Clinton Rd. sect., south of Old Country Rd., GARDEN CITY, N. Y.

Planet Constr. Co., 11 W. 42 St., New York 36, N. Y. LB $614,000, new addn. to and modernization existing bldg., P. S. 22 SCHOOL, Forest Ave. and Sanders St., MARINERS HARBOR (Sta. Staten Island.), N. Y. Bd. Educ., Director Bureau Constr., 49 Flatbush Ave. exten., Brooklyn 1, N. Y. Bids Oct. 8. CD 9/8.

▲ **Caristo Constr. Corp.,** 26 Court St., Brooklyn 2, N. Y. CA $2,216,000, general contract JUNIOR HIGH SCHOOL 167 (formerly P. S. 86), E. 76 St., between 2nd and 3rd Aves., Manhattan Boro, NEW YORK, N. Y. Bd. Educ., 49 Flatbush Ave. exten., Brooklyn 1, N. Y. Bids Oct. 6. CD 10/8, under LB.

▲ **Saxon-at-Seaford Homes,** c/o Alwin Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. $3,000,000. 230 HOUSES, 60-acre tract, Merrick Rd. and Maple St., SEAFORD, N. Y.

Rose Gardens Inc., c/o Rudolph L. Novak, archt., 713 Main Ave., Clifton, N. J. Owner Builds. $900,000, 75 HOUSES on 18-acre tract on Central Ave., NEW PROVIDENCE, N. J.

Colmar Constr., Inc., Colmar, Pa. Separate Contracts. $900,000. RESIDENTIAL DEVELOPMENT, Trewigtown Rd., COLMAR, PA.

Country Development Co., 15 Rittenhouse Plaza, Ardmore, Pa. Separate Contracts. $500,000. RESIDENCES, HAVERTOWN, PA.

▲ **Wynnewood Construction, Inc.,** 431 Haverford Ave., Wynnewood, Pa. Separate Contracts. $1,500,000. RESIDENTIAL DEVELOPMENT, Malvern and Paoli areas, MALVERN, PA.

Ambler Development Co., 6710 York Rd., Phila., Pa. Separate Contracts. $600,000. RESIDENTIAL DEVELOPMENT, east side of Garden St., etc., PHILA., PA.

Park Avenue Homes, Inc., 6710 York Rd., Phila., Pa. Separate Contracts. $600,000. RESIDENTIAL DEVELOPMENT, west side of Garden St., etc., PHILA., PA.

John M. Arovitch, 8247 N. 51 St., Phila., Pa. Separate Contracts. $500,000. apartment, 429 Montgomery Ave., WYNNEWOOD, PA.

Ernest Di Sabatino & Sons, Inc., 2601 W. 4 St., Wilmington, Del., CA, $500,000. SCHOOL, CHAPEL and SOCIAL BUILDING, WILMINGTON, DEL. Temple Beth Emeth, c/o Judge Daniel Herrmann, Public Bldg., Wilmington, Del. Bids Sept. 3. CD 8/5.

▲ **Irons & Reynolds,** 420 Lexington Ave., New York, N. Y., LB, $3,500,000. HOSPITAL addns., WILMINGTON, DEL. Memorial Hospital, 1501 Van Buren St., Wilmington, Del. Bids Sept. 30. CD 9/16.

▲ **H. K. Ferguson Co.,** 19 Rector St., New York, N. Y., CA, $2,500,000. OFFICE, WILMINGTON, DEL. Atlas Powder Co., Delaware Trust Bldg., Wilmington, Del. CD 8/3.

SOUTH

BIDS ASKED—BUILDINGS

▲ **Va., Roanoke**—HOTEL—B.A. 11/12—Norfolk & Western Ry. Co. A. B. Stone, ch. engr., General Office Bldg., 5 story structural steel frame Hotel Roanoke addn. $1,000,000. Small, Smith & Reib, 1010 Euclid Ave., Cleveland, O., archts. CD 2/20.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge.

Melvin Hall, Jr., Montgomery, La., LB, $119,377 6.924 mi. State Rt. 204, Bastrop-Arkansas State Line Hy., State Proj. 38-30-03, Morehouse Parish; LB $147,020 5.254 mi. Braswell School intersection Route 11 S.R. 591, SP 332-01-07, West Carroll Parish;

Forcum James Co., 1565 Choctaw Dr., Baton Rouge, La., LB, $151,049, 4.77 mi. Mounds-Delta Hy. State Rt. 4, State Proj. 205-18, Madison Parish;

Wm. T. Burton, Sulphur, La., LB, $68,916, 24.55 mi. Cameron Hackberry Hy., State Rt. 104, State Projs., 31-01-14 and 31-02-08, Cameron Parish;

C. O. Horton, Bossier City, La., LB, $75,431, 4.05 mi. Shongaloo-Haynesville Hy., State Rt. 70, Webster and Claiborne Parishes;

E. A. Caldwell, Raymond Bldg., Baton Rouge, La., LB, $224,533, 8.571 mi. Bayou-Cross Eva Hy., S.R. No. 18 and 461, S.P. 178-02-10, Concordia Parish;

T. L. James & Co., Ruston, La., LB, $793,153, 10.745 mi. Triumph-Venice Hy. S.R. 31, S.R. 62-06-13, FAS S-365 (2), Plaquemine Parish;

White Constr. Co., Lafayette, La., LB, $223,172 9.947 mi. Greensburg-Grangeville Hy. SP No. 37, SP 254-05-07, St. Helena Parish;

Barnhall Bros., Many, La., LB, $85,593, 6 mi. Converse-Pleasant Hill Hy., S.R. 180, S.P. No. 112-03-09, Sabine Parish;

Louisiana Paving Co., Kenner, La., LB, $233,545, 1.052 mi. Dixie-Inn-Minden Hy., S.R.N. 4, S.P. 1-04-16, FAP F-116 (10), Webster Parish. Bids Oct. 21. CD 10/13.

BUILDINGS

LOW BIDS AND CONTRACTS

Gaston Electric Contractors, Gastonia, N. C. CA $508,390. extend and modify electric distr. sys., NOY 77358, Charleston Naval Shipyard, CHARLESTON, S. C. P. Wks. Office, U. S. Naval Base, Charleston, S. C. Bids Aug. 20. CD 7/22.

C. D. Spangler Constr. Co., P.O. Box 3007, Charlotte, N. C. LB $565,000. Chesterfield and Edwards Elementary SCHOOLS, CHESTERFIELD, S. C. Chesterfield Co. Bd. Educ., Chesterfield, S. C. Bids Oct. 20. CD 10/1.

Cecil's Inc., P.O. Box 1895, Spartanburg, S. C., CA $619,256, elementary-high SCHOOL, TALBOTTON, GA. Talbot Co. Bd. Educ., Talbotton, Ga. Bids Oct. 15. CD 10/23, under LB.

Lee Memorial Hospital, Fort Myers, Fla., rejected bids Sept. 29, HOSPITAL, FORT MYERS, FLA., CA, $548,956. (Correction-status). CD 10/7, under CA.

Gervais F. Favret Co., Balter Bldg., New Orleans, La., LB $534,978. AUTO SALES and SERVICE BLDG., NEW ORLEANS, LA. Pontchartrain Motor Co., 701 Toulouse St., New Orleans, La. Bids Oct. 30. CD 10/1.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 17, 24 Wisconsin
STREETS AND ROADS
November 17, 24 Wisconsin

BIDS ASKED—BUILDINGS

O., Cincinnati—SCHOOL—B.A. 11/12—Bd. Educ., 216 E. 9th St., brick, steel, rein. con. Eastwood Elementary School, Duck Creek Rd., $700,000. Plans deposit $25. Howard McClorey, 528 Walnut St., archt. Beiseke & Ruehlmann, 626 Broadway, engrs. CD 10/2.

Ind., Beech Grove—SCHOOL—B.A. About 11/15—School Holding Corp., Beech Grove, Junior-Senior High School, Troy Ave. and Cleveland St. $950,000. McGuire & Shook, 1400-01 Fletcher Trust Bldg., Indianapolis, archts. CD 6/2.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Algot B. Larson, 3837 Lake St., Chicago, Ill., CA, $900,000 finance property bldg. on Midway Airport, CHICAGO, ILL. United Air Lines, 5959 S. Cicero Ave., Chicago, Ill. Bids Oct. 1, awarded Oct. 21.

Rozycki Bros. Co., 2268 E. Forest St., Detroit, Mich. CA $797,517, double swimming pool and double

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gymnasium, Post School, 8200 Midland St., DETROIT, MICH. City, Bd. Educ., 1354 Broadway, Detroit, Mich. Bids Oct. 7. CD 10/1.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Maple Heights Realty, Inc.**, 820 E. 64 St., Indianapolis, Ind. Owner Builds. $1,000,000 or more, HOUSING in area near Fort Harrison, INDIANAPOLIS, IND.

▲ **Barton-Malow Co.**, 2631 Woodward St., Detroit, Mich. CA $1,250,000. 3 story, masonry steel body and plating PLANT, auto factory, DETROIT, MICH. Cadillac Motor Co., General Motors Corp., 2860 Clark St., Detroit, Mich. Smith-Hinchman & Grylls, 800 Marquette Bldg., Detroit, Mich., archts. Bids Aug. 31. CD 8/27.

Miller-Davis Co., 1029 Portage St., Kalamazoo, Mich. CA $720,000. 96 brick, steel APARTMENTS, Western Michigan College, West Campus, KALAMAZOO, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lansing, Mich. Lee & Kenneth C. Black, 706 Capitol Savings & Loan Bldg., Lansing, Mich., archts. CD 9/8.

▲ **Louis Home Builders Co.**, 18035 James Couzens Hy., Detroit, Mich. Owner Builds. $3,000,000. 250 single brick HOUSES, Beech Villa, Beech St., REDFORD, MICH.

▲ **Bert L. Smokler & Co.**, 1200 Penobscot Bldg., Detroit, Mich. Owner Builds. $1,250,000. 100 single HOMES, Bretton Park, Charlton and Nichols Sts., TRENTON, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—BUILDINGS

Tex., Dallas—SCHOOL—B.A. 11/24—Dallas Independent School Dist., 3700 Ross St., Dan D. Rogers Elementary School, Abrams Rd. and Lovers Lane. $608,000. Thomas, Jameson & Merrill, 820 N. Harwood St., archts. CD 3/18.

▲ **Tex., Dallas**—HIGH SCHOOL—B.A. 11/30—Dallas Independent School Dist., 3700 Ross St., L. V. Stockard Junior High School, Wright and Ravina Dr. $1,134,700. Buford & Feinberg, 326 Interurban Bldg., archts. CD 8/18.

▲† **N. M., Los Alamos**—LABORATORY—B.A. 12/3—U. S. Atomic Energy Comn., Procurement Sec., Los Alamos, 300,000 sq. ft. 4 story rein.-con. general laboratory and admin. bldg., Inv. No. 291, 54, 5. $3,500,000-$4,500,000. Extended date. CD 9/23.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Phelps-Drake Co.**, 1415 Eighth St. S. E., Minneapolis, Minn., CA $1,312,256, addnl. force main and gravity sewers Twin City Arsenal, near New Brighton, Inv. 25-066-54-7, MINNEAPOLIS, MINN. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Oct. 15. CD 10/22, under LB.

▲ **IOWA**—State Hy. Comn., Ames,
Larsen Bros., 10 N. Main St., Council Bluffs, Ia., CA, $1,489,853, 8-beam overhead bridge, grading, paving, U. S. Hy. on West Broadway in Council Bluffs, UG 926 (3), Pottawatamie Co. Bids Oct. 20. CD 10/23, under LB.

F. M. Stowell Co., E. 13 St., Tulsa, Okla., LB $627,314, est. $778,600, Arkansas River sanitary intercepting sewer, TULSA, OKLA. City, City Hall, Tulsa, Okla. Bids Oct. 23. CD 10/7.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Standard Constr. Co.**, Builders Exchange, Minneapolis, Minn., LB, $1,263,216, general contract Iowa State HOSPITAL addns., INDEPENDENCE, IA. State Bd. Control, Des Moines, Ia. Bids Oct. 20. CD 9/25.

Frank B. Rollheiser, Sr., 414 N. 15 St., Kansas City, Mo., and **Frank B. Rollheiser, Jr.**, 1617 Everett St., Kansas City, Mo. Owner Builds. $500,000. Benedict APARTMENTS, KANSAS CITY, MO.

▲ **Henry C. Beck**, 1st. Natl. Bank Bldg., Dallas, Tex., CA $2,950,000. 27 story masonry, steel OFFICE, Akard and Main Sts., DALLAS, TEX. Corrigan Properties, Inc., 2008 Mercantile Bank Bldg., Dallas, Tex. CD 4/16.

N. R. Nielsen & Son, 632 Detroit St., Denver, Colo., LB $755,788, general contract 1 and 2 story HIGH SCHOOL, BRIGHTON, COLO. School District No. 27, Adams Co., Brighton, Colo. Bids Oct. 20. Bids June 25 rejected. CD 6/18.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

November 18 California

▲† **Oregon**—B.A. 11/19—U. S. Eng., Pittock Block, Portland, intake structures and gate structures, The Dalles Dam, Wasco Co., CIVENG-35-026-54-5. $5,000,000. CD 9/9, under LB.

BIDS ASKED—BUILDINGS

Calif., San Francisco—SCHOOL—B.A. 11/18—Dpt. P. Wks., City Hall, Starr King Elementary School. $605,000. Plans deposit $200. CD 11/17/48.

SOON LETS CONTRACT—BUILDINGS

▲ **Calif., San Mateo**—SHOPPING CENTER—David G. Bohannon, 859 San Mateo Dr., soon lets contract Hillsdale Shopping Center and Macy's Department Store, Hillsdale, $12,000,000. Welton, Beckett & Assocs., 173 Maiden Lane, San Francisco, archts. CD 9/23.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento,

Madonna Constr. Co., Box 910, San Luis Obispo, Calif. CA, $695,878, grading, paving, 2 rein.-con. bridges 7.3 mi. between Huer Huero Creek and west of Estrella River, near Paso Robles, San Luis Obispo Co. Bids Oct. 14, awarded Oct. 20. CD 10/22, under LB.

▲† **Ralph O. Dixon**, San Carlos, Calif., LB, $327,757 Schedule 1;

T. E. Connolly, Inc., 461 Market St., San Francisco, Calif., LB, $322,910, Schedule 1-A;

Stolte, Inc., 8451 San Leandro St., Oakland, Calif., LB, $992,874, Schedule 2; LB $1,014,681 Schedule 3; LB $989,026, Schedule 4; earthwork, tunnel pipe line and structures, incl. terminal structure, Station 81 plus 58 to Station 387 plus 48.68, Camino Conduit, Central Valley Proj. 516 Park Unit, Spec. DC 4040, CALIFORNIA Bureau Reclamation, Dpt. Interior, Folsom, Calif. Bids Oct. 20. CD 9/18.

▲† **C. H. Leavell & Co.**, 1900 Wyoming St., El Paso, Tex., LB, $1,625,574, training facilities at Marine Barracks, NOY 76752, Spec. 37403, CAMP PENDLETON, CALIF. Eleventh Naval Dist., San Diego, Calif. Bids Oct. 20. CD 9/23.

BUILDINGS

LOW BIDS AND CONTRACTS

E. A. Hathaway & Co., Inc., 1098 S. Fifth St., San Jose, Calif. LB, $809,900 complete job, LB $533,400 general contract FOOD SERVICE bldg., Agnew State Hospital, AGNEW, CALIF. State Div. Architecture P. Wks. Bldg., Sacramento, Calif. Bids Oct. 20. CD 9/23.

▲ **Emmett Jensen**, 329 N. Chevy Chase, Glendale, Calif., and **George Davidson**, Box 382, Loma Linda, Calif., CA Approx. $1,000,000, 5 story, rein.-con. HOSPITAL, GLENDALE, CALIF. Glendale Sanitarium & Hospital, 1509 E. Wilson Ave., Glendale, Calif. CD 4/18/52.

▲ **Carson Park Builders**, Box 8086, Long Beach, Calif., CA, $1,334,200, 156 frame, stucco DWELLINGS, Keynote, Los Coyotes, Ostrom, Petaluma Sts., LONG BEACH, CALIF. Carson Park Mutual Homes No. 9, Box 8086, Long Beach, Calif. Paul J. Duncan, 13310 Moorpark St., Sherman Oaks, archt.

▲ **H. B. Nicholson**, 880 East Colorado St., Pasadena, Calif., LB, $1,964,000, North Reseda Junior High SCHOOL, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Oct. 22. CD 10/7.

▲ **Jas. E. Roberts**, 4444 Piedmont Ave., Oakland, Calif., LB $1,099,500, Napa Junior High SCHOOL, NAPA, CALIF. Napa Union High School, Napa, Calif. Bids Oct. 21. CD 9/23.

M & K Corp., Financial Center Bldg., San Francisco, Calif. LB, $902,717, Riddepoint No. 3 SCHOOL, SAN FRANCISCO, CALIF. Dpt. P Wks., City Hall, San Francisco, Calif. Bids Oct. 21. CD 10/1.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **J. L. E. Price & Co. Ltd.**, 680 Sherbrooke St. W., Montreal, Que., CA, $1,200,000, superstructure for FACTORY, BROCKVILLE, ONT. Automatic Electric (Canada) Ltd., 26 Hollinger Rd., Toronto, Ont. Bids Oct. 16, awarded Oct. 20. CD 10/8.

Ouemont Constr. Inc., 285 Bernard Ave., Montreal, Que., CA, $700,000, 2 story, bsmnt., 65x452 ft., concrete, brick, stone SCHOOL, Bellechasse St. for Parish of Notre Dame de Foyer, MONTREAL, QUE. Catholic School Comn., 117 W. Ste Catherine St., Montreal, Que. Bids Oct. 30. CD 10/5.

U. S. POSSESSIONS

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **E. E. Black, Ltd.**, Honolulu, T. H., LB $4,518,582, Kalihi Tunnel, Sect. C, HONOLULU, T. H. City, City Hall, Honolulu, and County of Honolulu, T. H. Bids Oct. 20. CD 8/5.

LATIN AMERICA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Parsons & Whittemore, Inc.**, 250 Park Ave., New York 17, N. Y., U.S.A., CA $6,000,000. PAPER MILL, 50 tons of pulp daily from Eucalyptus wood, near Sao Paulo, BRAZIL. Companía Paulista de Celulos Copas, Sao Paulo, Brazil.

(Proposal Advertisements see pp. 105 to 107)

RUBBING CEILINGS?

DO IT FASTER • EASIER • BETTER • CHEAPER WITH A

FOR CEILINGS UP TO 12 FEET

GIRAFFE

• With the grinding head automatically held against the ceiling at the proper pressure, the operator needs only to guide the machine.

GIRAFFE

CONCRETE GRINDING CORP.
300 STRAIGHT ST. PATERSON, N. J.

Stang WELLPOINT SYSTEM for KNOW-HOW ENGINEERING SUPERVISION EQUIPMENT & Keep Jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

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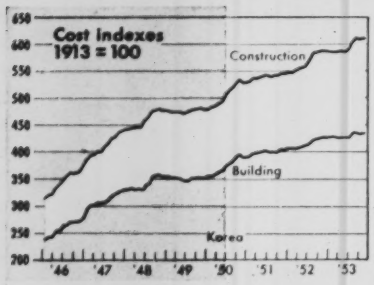
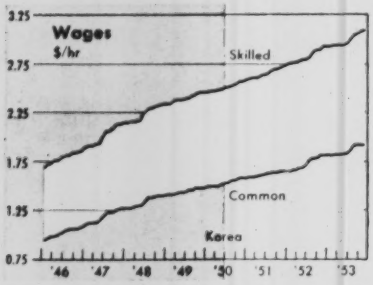
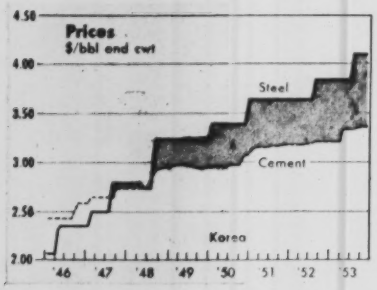
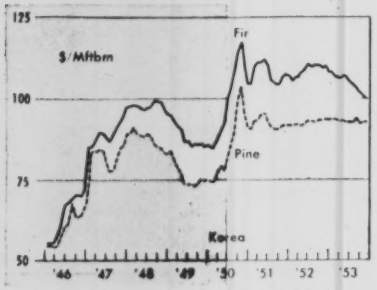
Bell, California 6221 Atlantic Ave P. O. Box 631 Tel. [illegible] 5-7421

NOVEMBER CONSTRUCTION SCOREBOARD







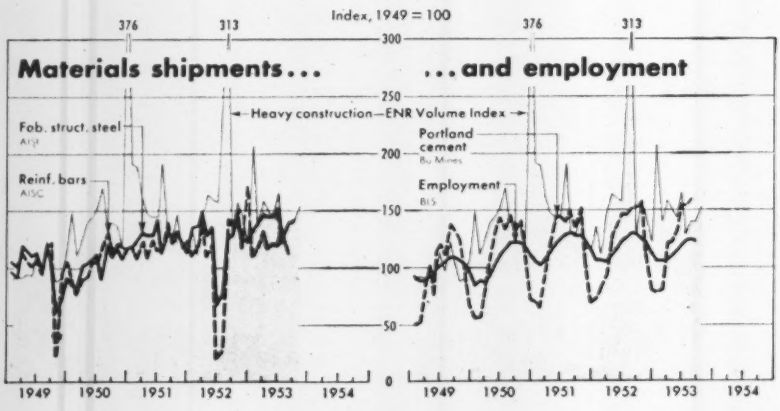


ENR INDEXES (1913 = 100), 20-cities' average	1953 Nov.	% Change from last Month	% Change from last Year
Construction Cost	610.92	+ 0.03	+ 3.8
Building Cost	436.34	+ 0.01	+ 2.4
WAGE RATES, 20-cities' average			
Common	$1.928	+ 0.05	+ 6.1
Skilled (aver. 3 trades)	3.086	+ 0.03	+ 5.1
Bricklayers	3.364	0.0	+ 3.1
Structural Ironworkers	3.055	+ 0.1	+ 6.7
Carpenters	2.840	0.0	+ 5.7
MATERIAL PRICES, 20-cities' average			
Cement, bulk, per bbl	$3.359	0.0	+ 4.3
Structural Steel, (3-mill aver.), per cwt	4.100	0.0	+ 6.5
Sand, per ton	2.187	− 0.2	+ 3.7
Lumber, 2x4 Fir, per M. ft. bm	99.875	− 0.7	− 8.9
Lumber, 2x4 Pine, per M. ft. bm	91.533	+ 0.6	− 2.0
Common brick, per M	32.911	+ 1.0	+ 4.1
Ready-mixed concrete, per c. y	11.963	+ 0.2	+ 5.8
Structural Clay Tile, 3x12x12 per M	159.859	+ 0.08	+ 3.9

CONTRACTS AWARDED (Millions)	1953 Oct.	1953 10-Mos.	% Change from '52 Oct.	% Change from '52 10-Mos.
Total U. S. (ENR reported)	$1,469.2	$12,865.6	+ 1.6	− 6.1
Private	856.4	7,330.9	+ 8.7	+23.9
Public	612.8	5,534.7	− 6.9	−28.9
Federal	111.4	1,266.3	−54.4	−69.9
ENR Volume Index, '13 = 100	528	518	− 2.2	−13.7
NEW CAPITAL (Millions)				
Total	690.5	10,063.7	− 8.8	−31.2
State & Municipal Bond Sales	430.0	3,866.0	+60.0	+33.5
Corporate Security Sales	248.9	3,730.2	−47.6	+13.5
Federal (non-federal work)	11.6	871.9	−14.7	+ 0.3
Federal (federal work)	.....	1,595.6	.....	−78.9

MATERIAL SHIPMENTS & LABOR SUPPLIES (Millions)	1953 Aug. (A) Sept. (S)	8-Mos. (8) 9-Mos. (9)	% Change from '52 Mo.	% Change from '52 Yr.-Cum.
Cement bbls, Bu. of Mines	27.092(A)	172.275(8)	+ 4.5	+ 4.9
Fabr. Struc. Steel, tons AISC	.256(S)	2.297(9)	+12.2	+17.6
Lumber, mil. ft. bm., NLMA	3.218(A)	26.105(8)	− 4.8	+ 5.9
Lumber Prod., mil. ft. bm., NLMA	3.437(A)	26.137(8)	− 0.6	+ 5.5
Contract Constr. Employ., BLS	2.670(S)	2.493(9)†	− 3.4	− 1.9

† Average



Washington throws its weight on the side of inflation

"A war economy no matter what you may choose to call it."

That's how the business scene looks now to the Eisenhower Administration, as a result of disappointments in trying to balance the budget for fiscal 1955.

The words are those of Budget Director Joseph M. Dodge. But the thinking behind them is shared by all the top administrators.

It adds up to a fundamental change in the Administration—and a change in the outlook for the construction industry, too.

Key officials are willing to admit privately that if the next year's budget is balanced at all, it will be because Russia unexpectedly makes firm and unmistakable signs of wanting peace. Short of that—no balance.

This doesn't mean Eisenhower has given up balancing the budget as his long-run goal, but this objective has been shoved into the indefinite future. In effect, this is what Administration spokesmen are now saying:

• We can't cut defense spending enough to balance the budget, now that Russia has the hydrogen bomb. That's from the new Joint Chiefs of Staff. The discouraging drag of events in Korea bolsters this line of thought.

• We can't cut the expensive domestic programs until we get a friendly Congress with a solid Republican majority. The Wisconsin Ninth District result—where a Democrat was elected there for the first time in history—highlights their worries on that score.

All this means more deficit financing and more federal spending at a high level.

This is a sharp break from the situation last summer, when the Administration had the comfort of a brand-new Korean truce, and administrators were happily cutting billions from the Democrats' last spending plan. Deflation was in the air then. Now government policies are more on the side of inflation.

• **Inflation doses**—Tied in closely with the new Administration thinking is a willingness to let inflationary forces work in the economy, at least in small doses. You see that in the way the Treasury packaged its $2-billion new-money financing this week. Most of these 7-year-10-months bonds will wind up in the hands of commercial banks. This financing was designed by the Treasury with that particularly in mind.

That means some $2 billion more in the money supply. Here's why: To pay for the new bonds, commercial banks create deposits for the Treasury on their books. The Treasury gradually will draw on this money, which did not exist before, and spread it around in the economy.

A Treasury offering designed primarily for non-bank investors, like life insurance companies, would not have created this new money. Instead, it would have absorbed savings. A Treasury spokesman said the decision was made because that's what the market seemed to want. The alternative was a longer bond. A 15-year issue was given long consideration.

One reason for deciding against that was that it would compete for long-term money which might otherwise go into mortgages. There, again, is the new attitude: Don't do anything to dry up mortgage money in a period when housing starts are declining.

• **Tougher on taxes**—The change probably means the Administration will stiffen against tax reductions, however. The idea is that if it can't reduce spending, it can at least keep the deficits as small as possible.

Treasury Secretary George M. Humphrey laid out this viewpoint at the Pebble Beach, Calif., meeting of the Commerce Department Business Advisory Council last week. He stood by earlier promises that the excess profits tax would die next Jan. 1, and that a cut of around 10% would go into effect for most income tax payers at the same time. Beyond that, he would promise nothing.

Until the Pebble Beach meeting, members of the tax-writing House Ways and Means Committee thought Humphrey would not object to net reductions in the tax load up to an additional $1.5 billion or $2 billion. Committee members would like to hand these around in the form of relief for working mothers, say, and in other politically attractive packages. Now they wonder whether Humphrey has changed his mind.

At Pebble Beach, Humphrey emphasized that the Administration will continue to oppose a reduction of the basic corporation rate from 52% to 47% next April 1, as the existing law allows. He would not even promise a net reduction in excise taxes. The law calls for a reduction of the special post-Korean excises April 1, but Humphrey left the impression that he hopes new excises would be extended to enough items to make up this loss, plus some additional revenue.

To members of Congress, this sounded unhappily like another all-out drive by the Administration to hold up revenues, along the lines of its fight for a six months' extension of the excess profits tax made during the last session.

The new Administration attitude will be described as a change of policy. Actually, it was not a formal decision at all. It was more like a grudging admission that Russian threats and the expensive domestic programs were not matters which economy-minded administrators could control.

Mortgage shortage?

Lenders took more this year than in 1952

In spite of the "shortage" of mortgage money this year, the figures show that lenders put more money into mortgages this year than in 1952. This indicates there was no shortage of mortgage money, provided builders and homeowners were willing to pay a higher rate for it.

Take, for instance, the figures published recently by the Home Loan Bank Board on nonfarm mortgages recorded for $20,000 or less. HLBB reported $13.1 billion of these mortgages for the first eight months of 1953, up 12.4%. Among the various types of lenders, the savings and loan associations stood out as the most important. They made nearly 38% of the dollar volume of mortgage loans.

The savings and loans took about 18% more in dollar volume of mortgage loans in the first eight months of this year than in the similar 1952 period, but they were outdistanced in this respect by the mutual savings banks, which increased their mortgage loans by nearly 20%.

• **$4 out of $5**—You can get an even better picture of the role which savings banks have played in the mortgage market this year by studying a

report made last week by the National Association of Mutual Savings Banks. The association reported that during the first nine months of this year mutual savings banks invested in mortgages $4 out of every $5 they received from their depositors.

During the first nine months, savings banks increased their mortgage holdings by $1.1 billion. At the end of September, they held $12.3 billion worth of mortgages—51.4% of their deposits, highest ratio since 1935.

The association also pointed out that for every dollar by which the savings banks increased their mortgage holdings, they had to make $1.92 in new mortgage loans. That's because of the steady reduction of the mortgage portfolio by amortization and advance payments.

• **Life insurance companies**—These companies, which since the war have been very heavy mortgage investors, have not been so much in the mortgage market in the last two years. However, the HLBB figures now show that they bought about 7% more in dollar volume of nonfarm mortgages of $20,000 or less during the first eight months of the year than in the corresponding period of last year. And figures published by the Institute of Life Insurance for the first eight months of 1953 show a steady increase in mortgage investment. The institute reports that U. S. life insurance companies bought $2,560 million in nonfarm mortgages, compared with $2,377 million for same 1952 period.

Pushed up by private work, awards set October record

Heavy construction contract awards reported in October by ENGINEERING NEWS-RECORD and the Construction Daily set a new record for the month. Contract awards totaled $1,469 million, topping by 2% the previous high for this month set in 1952. Compared with September 1953, which was itself a record month (ENR Oct. 8, p. 359), dollar volume was up more than 5%. It averaged $294 million per week during the five weeks of October, compared with $279 million per week in the four weeks of September.

Key to the high level of October contracts was the gain in industrial and commercial awards. Industrial contracts jumped to $415 million, the largest monthly total since January. Commercial awards rose moderately to $95 million. Mass housing awards dropped off in October, after a pickup in September. However, the $291 million of housing contracts in October was about 13% ahead of the corresponding month last year. The result: Private construction totaled $856 million, largest monthly figure since January.

• **Public work**—State and municipal volume continued at the high level of the preceding two months. Contracts averaged about $100 million per week, about the same as in August and September. Total awards were $501 million, the best since April, which was also a five-week month.

Federal volume, which averaged about $22 million a week in October, was also about the same as in August and September. But compared with a year ago, federal contracts were off 55%.

Volume was heavy in October in nearly all categories of public works construction. Public building awards climbed to $184 million for the biggest monthly total since January. Public housing contracts recovered from the September slump, racking up $19 million.

Bridges scored the third big month in a row with $81 million in October, making it the biggest month so far in 1953. Highway awards totaled $172 million, a weekly average of about $34 million. While this weekly average was substantially lower than the $41 million weekly average in September, it was 48% higher than a year ago.

Waterworks contracts posted $17.4 million in awards, a little lower on the weekly average basis than in September, and also less than October 1952, awards. Sewerage contracts, with a total of $36 million, were below September but well above October 1952.

ENGINEERING CONSTRUCTION CONTRACTS—OCTOBER 1953

ENGINEERING NEWS-RECORD *reports continental U. S. construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $34,000; *other public works,* $60,000; *industrial buildings,* $82,000; *other buildings,* $300,000

Five Weeks—Thousands of Dollars (000 Omitted)

	October, 1953							U. S. Cumulative Ten Months		% Change	Canada October
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1953	1952	'52 to '53	1953
Public Works											
Waterworks	322	3,133	5,085	1,342	5,875	1,648	17,405	200,924	188,853	+ 6	3,110
Sewerage	2,110	8,907	5,457	5,974	6,476	7,396	36,320	370,693	251,600	+47	3,331
Bridges	3,489	15,600	8,117	34,370	13,650	6,266	81,492	589,222	329,072	+79	3,654
Earthwork and drainage	203	483	4,540	300	4,454	4,588	14,568	314,078	424,136	−26	2,503
Streets and roads	4,880	37,695	43,990	38,097	28,641	18,218	171,521	1,532,129	1,279,670	+20	1,765
Public buildings, residential	4,866	.....	6,987	745	6,210	.....	18,808	340,793	552,456	−38	3,631
Other public buildings	6,152	31,177	38,537	34,689	52,251	21,116	183,922	1,460,159	4,037,298	−64	16,039
Unclassified	720	29,309	12,564	13,555	21,469	11,207	88,824	726,726	720,912	+ 1	3,973
Total public	22,742	126,304	125,277	129,072	139,026	70,439	612,860	5,534,724	7,783,997	−29	38,006
Federal government (included in above classifications)	896	10,222	19,523	16,061	45,820	18,870	111,392	1,266,334	4,219,482	−70	6,802
Private											
Bridges	.....	.....	.....	377	.....	.....	377	7,565	15,569	−51	.....
Industrial buildings	10,526	11,019	20,868	179,564	48,403	144,342	414,722	2,460,463	2,368,209	+ 4	232,673
Mass housing	2,200	90,015	31,545	65,220	81,852	19,932	290,764	3,050,451	2,536,499	+20	11,243
Commercial buildings	3,250	17,773	9,816	19,899	29,037	14,777	94,552	1,005,611	564,913	+78	15,931
Unclassified	140	75	8,222	225	30,112	17,203	55,977	806,843	433,202	+86	1,422
Total private	16,116	118,882	70,451	265,285	189,404	196,254	856,392	7,330,933	5,918,392	+24	261,269
Total Engineering Construction:											
October, 1953 5 weeks	38,858	245,186	195,728	394,357	328,430	266,693	1,469,252	.....	.....	.....	299,275
September, 1953 4 weeks	37,129	344,200	198,630	219,656	247,833	79,124	1,116,572	.....	.....	.....	73,647
October, 1952 5 weeks	89,495	304,299	261,654	187,624	440,156	163,153	1,446,381	.....	.....	.....	213,645
Ten Months 1953	528,707	2,877,241	2,259,607	2,884,516	2,717,337	1,598,249	.....	12,865,657	.....	− 6	1,088,138
Ten Months 1952	549,065	2,186,170	3,325,281	3,073,086	3,026,316	1,542,471	.....	.....	13,702,389	.....	1,056,893
% Change '52 to '53	−4	+32	−32	−6	−10	+4	.....	.....	.....	.....	+3

Leased lighting

Cleveland maintenance firm owns factory systems

It's fairly common practice these days for U. S. industry to have its lighting and other electrical equipment maintained by an outside contractor. Several companies in the Cleveland area have now gone a step further. They lease their lighting from a local maintenance outfit, C & S Lighting Maintenance Co. This practice is sometimes used where air conditioning equipment is involved, but it is quite unusual for lighting. It may soon be used in construction of new plants.

Companies which lease their lighting believe that it makes a lot of sense. The first firm which adopted the idea, Parker Appliance Co., of Cleveland, estimated that its out-of-pocket expense to put in new lighting and maintain it for three years would be $31,763. But Parker found it would cost only $10,703 to have C & S put in the lighting and operate it for three years. Rentals for later years presumably will be smaller, since C & S already will have recovered its capital investment.

• **Tax angle**—The secret of this low cost, of course, is that the rental payments are tax deductible. Parker Appliance was in the 70% tax bracket at the time it studied alternative costs. Besides the cost angle, companies using the plan have found that it avoids problems of fixing wage scales of plant employees who perform lighting maintenance as a part of other duties. C & S, of course, handles all maintenance, replaces lights, and takes care of all operating expenses except the cost of providing power. C & S guarantees a minimum standard of brightness, in terms of foot candles. It inspects and cleans the system periodically.

The Parker Appliance contract has now been in effect for a year since then, other companies, including Glidden Co. and Goodrich Chemical Co. have signed up. At the end of three years, Parker will have an option to renew. If it fails to do so, C & S may take out the equipment at its own expense.

C & S hasn't yet handled any new plants on this basis, but has three or four in the bidding stage. It will either follow the architect's lighting plans or will handle engineering and installation itself.

(*Business & Finance cont. on p. 104*)

BRIEFS from The YEOMANS GUARD

• a true fish handling story with a sound moral for many process industries that handle bulky materials usually believed to be "unpumpable"

How to Catch a Fish . . . and a PROFIT!

From the Grand Banks off Newfoundland
To the shores of Puget Sound—
From the Gulf Mexique to South Afrique,
Wherever fish abound—
You'll find shrewd modern fishermen
Who like their profits plump
Now load their fish—unload 'em too—
With a trusty Yeomans Pump

Typical of the profit-minded businessmen who are cutting costs through engineered pumping of "unpumpable" materials are the canny fish boat owners the world over who use Yeomans Fish Pump Systems for loading fish from boat to dock—and find that the **pump installation pays for itself comfortably in less than a single season.**

For instance:

- the Menhaden boat "Tar Heel" of Port Arthur, Texas, loaded 10,000 fish from purse-net into the hold in just one minute!
- when a Maine-coast catch of herring threatened to smother the fish and destroy nets, the Yeomans-equipped "Sea Fox" was summoned by radio-phone—and saved both the catch and nets.
- A Yeomans Fish Pump on the cannery dock of Canadian Fishing Co., Ltd., Vancouver, B. C. averages 180 tons of fish per hour—has handled 10 tons a minute.

All of which suggests that unusual material handling problems in many varied industries are finding easy and highly profitable solution in Yeomans Centrifugal Pumps.

Have you a "problem?" Let's inquire into what we may be able to do about it.

Talk to your local Yeomans representative, a good man to know—or write us.

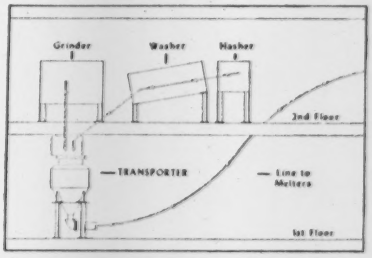
Another way to pump those "unpumpable" bulk items

Have you a pet "nuisance" in your plant?—some hard-to-handle item that is costing you money and sleep! Take a firm, careful look at the "Transporter"—that amazingly simple, hard-working Yeomans unit that is performing low-cost miracles! "Transporter" is a pneumatic ejector with no working parts, nothing to clog; safe; needs no attention or service.

It can handle heavy bulk materials such as

- wastes—in packing houses, canneries, tanneries, etc.
- pulp and paper materials
- foundry sand, ashes, powdered coal
- sludge, screenings and the like
- construction material

This flow diagram·



shows how a meat packer solved a problem of handling difficult materials—hashed and washed offal, shredded carcasses and bones, warm fats and trimmings and paunch contents.

Why not give your local Yeomans representative a drawing or sketch of your set-up and mention the kind and quantity of material to be handled. Of write us for bulletin

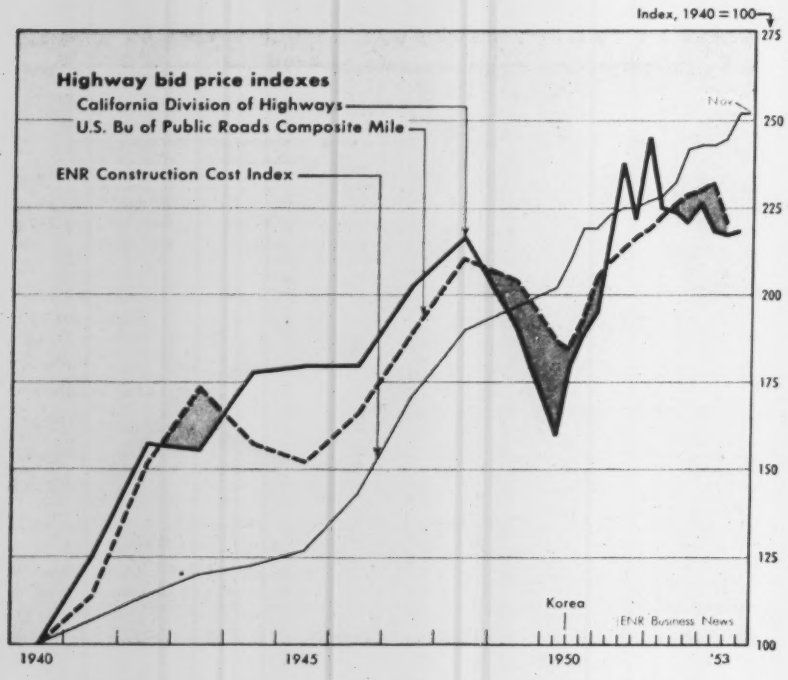
☐ **Send Transporter Bulletin**

These stories, and others, are told in full in our periodical, **The Yeomans Guard.** It's full of news and useful information about the pumping of materials and the treatment of wastes, both domestic and industrial. A copy of the current issue is yours for the asking. Contact your local Yeomans Representative—listed in the telephone book yellow pages under "Pumps"—or write direct.

YEOMANS BROTHERS COMPANY

1999-1 N. RUBY STREET, MELROSE PARK, ILLINOIS

Manufacturers of: Centrifugal Pumps and Pneumatic Ejectors for Buildings, Municipalities, and Industrial Applications, and a Full Line of Waste Treatment Equipment.



Competition, more materials keep highway costs stable

In spite of higher labor costs, increased competition among bidders and improved supplies of materials are keeping overall construction costs of California state highways from rising. That's the story told by the California Highway Construction Cost Index, which is worth close attention by highway contractors, since it is the only state index available on a quarterly basis.

The California index has stayed almost stationary during the first nine months of this year (chart), while ENR's Construction Cost Index has continued to rise slowly and the Composite Mile Index that is maintained by the Bureau of Public Roads also has leveled off.

During the third quarter of this year, the California index rose only 0.2%. That's 11.2% below the level of the last quarter of 1952, which was the all-time high.

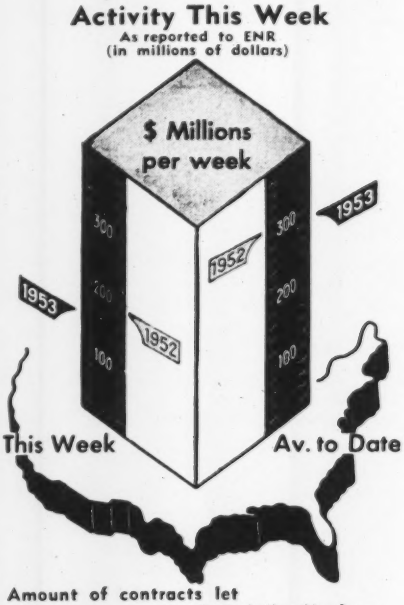
• **Reasons**—The fact that overall costs are holding steady, in spite of higher wages, is partly due to increased competition. The California Division of Highways reports that in the third quarter few projects have attracted less than six or seven bidders, while on many jobs the number of bidders has increased to range anywhere from 12 to 16.

The California Division of Highways believes that another big reason why bids are kept stable is the increased availability of materials. Back in the days when contractors occasionally had to buy materials in the gray market to complete their jobs on time, they added an extra percentage to their bids in order to allow for such emergencies. Now, this practice isn't necessary.

ENR's cost indexes show little change

ENR's Construction Cost Index edged up very slightly for November. It now stands at 610.92, about 0.03% higher than in October. The Building Cost Index is 436.34, about the same as last month. Both indexes are based on 1913 = 100.

This is the third straight month that the indexes have showed little change. Both of them are close to the all-time highs they reached last August, but they have climbed much more slowly this year than in 1952.



Amount of contracts let

	This Week*	Cumulative 45 wks 1953	1952	% chge
Federal	$8.3	$1,275.5	$4,236.9	−70
State and municipal	56.0	4,324.4	3,621.8	+19
Total pub.	64.3	5,598.9	7,858.7	−29
Total priv.	88.5	7,419.5	6,039.1	+23
U. S. total	**$152.8***	**$13,018.4**	**$13,879.8**	**−6**
Contracts by type of work				
Waterworks	$4.1	$204.9	$195.1	+5
Sewerage	6.1	376.7	258.2	+46
Bridges	4.4	601.0	351.1	+71
Highways	13.5	1,545.0	1,295.3	+19
Earthwork, waterways	4.4	318.7	426.2	−25
Buildings:				
Public, excl. hsg.	18.4	1,478.5	4,063.7	−64
Housg., pub.	5.7	346.4	554.0	−37
Housg., priv.	41.5	3,091.8	2,590.1	+19
Commercial	13.6	1,019.5	576.4	+77
Industrial	27.7	2,488.5	2,419.0	+3
Unclassified	13.4	1,546.9	1,168.7	+32
Total	**$152.8***	**$13,018.4**	**$13,897.8**	**−6**

* 4-day week.

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

	Week of Oct. 29 1953	Cumulative 42 Wks 1953	% chge 1952-53
Corporate securities	$35.4	$3,730.2	+14
State and municipal:			
Excluding housing	27.4	3,604.6	+39
Federal loans	4.5	101.0	−68
Federal aid	...	770.9	+40
Total non-federal	**$86.1**	**$8,468.1**	**+20**
Federal appro.:			
In U. S.	...	$1,566.7	−79
Outside U. S.	...	28.9	−85
Total new capital	**$86.1**	**$10,063.7**	**−31**

ENR indexes		1953	Base Years = 100 1913	1926	1949
Construction cost	Nov		610.92	293.67	128.07
	Oct		610.76	293.59	128.04
Building cost	Nov		436.34	235.87	124.03
	Oct		436.31	235.86	124.03
Volume	Oct		528	215	153
	Sept		487	198	141

"I could see the corpsman kneeling over me. The blood plasma was running down through a tube into my arm and he said everything was going to be O.K. I was walking across an enemy mine field in Seoul when one exploded and a piece of shrapnel caught me in the leg.

" 'Got enough of that stuff?' I asked him, pointing to the blood. 'I guess we never have enough,' he said, 'but you can thank *somebody* for this pint.'

"How do you thank 'somebody' for blood? For saving your life? When I got back home, I discovered the answer at my local blood donor center. There's only *one* way to say thanks—by giving some of your own blood."

"How do you thank 'somebody' for Blood?"

Yes, all kinds of people give blood—for all kinds of reasons. But whatever *your* reason for giving blood, this you can be sure of: Whether your blood goes to a combat area, a local hospital, or for Civil Defense needs—this priceless, painless gift will some day save an American life!

Business Executives!
✓Check These Questions!

If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

- ☐ Have you given your employees time off to make blood donations?
- ☐ Do you have a Blood Donor Honor Roll in your company?
- ☐ Have you set up a list of volunteers so that efficient plans can be made for scheduling donors?
- ☐ Have you arranged to have a Bloodmobile make regular visits?
- ☐ Has your management endorsed the local Blood Donor Program?
- ☐ Have you informed employees of your company's plan of co-operation?
- ☐ Was this information given through Plant Bulletin or House Magazine?
- ☐ Has your company given any recognition to donors?
- ☐ Have you conducted a Donor Pledge Campaign in your company?

Remember, as long as a *single* pint of blood may mean the difference between life and death for *any* American . . . the need for blood is *urgent!*

Give Blood Now—Call Your Red Cross Today!

National Blood Program

OFFICIAL PROPOSALS

Bids: November 19, 1953

Ground Indicating System Port Newark

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M 212
PROPOSAL NO. 278

Sealed proposals for furnishing all labor, material and equipment necessary for installing a 2300 Volt Ground Indicating System at Buildings Nos. 9 and 15 at the Naval Industrial Reserve Shipyard, Port Newark, N. J., will be received at the office of the Director of Purchase of The Port of New York Authority, Room 900, 111-8th Ave., New York 11, until 11:00 A.M. (E.S.T.) Thursday, November 19, 1953, at which time and place said proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: December 3, 1953

Relief Sewer System

PHILADELPHIA, PENNA.
PROCUREMENT DEPARTMENT
WATER DEPARTMENT

Sealed Proposals will be received in Room 313 City Hall Annex, until 1:30 P.M., EST, Thursday, December 3, 1953, and opened at that time in Room 313 City Hall Annex, Philadelphia, Pennsylvania, for CONTRACT NO. S-1831—BID NO. 2067.

Sewer in 47th St.
From a point 79.45 ft. S. of S.H.L. of Fairmount Ave. to Fairmount Ave.
and in
Fairmount Ave. from 47th St. to 50th St.
and in
50th St. from Fairmount Ave. to Brown St.
and in
Brown St. from 50th to a pt. 27.39 ft. W. of W.H.L. of 50th St.
(MILL CREEK RELIEF SEWER SYSTEM)

Principal items of work
1928 lin. ft. of 14 ft. inside diameter concrete sewer in rock tunnel
196 lin. ft. of 14 ft. x 12 ft. and 17 ft. x 18 ft. reinforced concrete sewer in open cut
2 reinforced concrete chambers
Estimated completion of work—400 working days

Proposal forms and specifications may be obtained in Room 1131 City Hall Annex. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 51 North 13th Street, Philadelphia, Pennsylvania.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, 1103 City Hall Annex, Philadelphia 7, Pennsylvania, at least one (1) week prior to the date of opening bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal form.

Bids: November 24, 1953

Dwelling Unit Increment

HOUSING AUTHORITY OF THE CITY OF LOS ANGELES, CALIFORNIA
1401 EAST FIRST STREET
LOS ANGELES 33, CALIFORNIA
FOR PART 2—140 DWELLING UNIT INCREMENT
PUEBO DEL RIO EXTENSION
PUBLIC HOUSING ADMINISTRATION PROJECT NO. CAL 4-15
LOCATION 53rd STREET, 55th STREET AND LONG BEACH AVENUE
LOS ANGELES, CALIFORNIA

Plans and Specifications
Prepared By
Theodore Criley, Jr. and Henry C. Burge
Architects
510 Knight Way, LaCanada, California
Telephone: SYlvan 0-3202

Invitation for Bids will be published October 16, 1953. Revised Plans and Specifications dated October 16, 1953 and Bidding Documents ready for distribution October 20, 1953.

Bids to be opened 2:15 P.M. (P.S.T.) November 24, 1953.

For further information regarding bidding Telephone ANgelus 2-2121, Extension 55.

OFFICIAL PROPOSALS

Bids: November 18, 1953

Furnishing and Delivering Fire Hydrants

WASHINGTON SUBURBAN SANITARY COMMISSION
CONTRACT NO. 1322-W

Sealed proposals for furnishing and delivering twenty-five (25) 6½-foot; thirty (30) 6-foot; twenty-five (25) 5½-foot; thirty-five (35) 5-foot and seventy (70) 4½-foot fire hydrants will be received in the office of the Purchasing Agent of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland until 10:30 A.M., Wednesday, November 18th, 1953, at which time and place they will be publicly opened and read.

Specifications may be obtained from W. R. Douglas, Purchasing Agent of the Commission, Hyattsville, Maryland.

Raymond W. Bellamy, Chairman
L. S. Ray
J. Norman Ager
Commissioners

Attest:
James B. Parkhill
Secretary-Treasurer

Bids: November 17, 1953

Installation of Parking Meter Standards

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
OPERATIONS BUILDING AREA
CONTRACT NYA-210.014

Sealed proposals for the furnishing and installation of Parking Meter Standards in the Operations Building Area at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1111, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, November 17, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1111, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, November 5, 1953

Bids: November 19, 1953

Installation of Two Pot Washing Combination Sinks

THE PORT OF NEW YORK AUTHORITY
KITCHEN EQUIPMENT
NEW YORK INTERNATIONAL AIRPORT, JAMAICA, N. Y.
PROPOSAL NO. 279

Sealed proposals for furnishing all labor, material and equipment to furnish and install two pot washing combination sinks with double drainboards at the International Idlewild Catering Corporation, New York International Airport, Jamaica, N. Y., will be received at the office of the Director of Purchase of The Port of New York Authority, Room 900, 111 8th Ave., New York 11, until 11:00 A.M. (E.S.T.) Thursday, November 19, 1953, at which time and place said proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: December 1, 1953

New Jersey Turnpike Authority

CONTRACTS NO'S. 102A, 102B, 102C, 102D, 102E and 102F

The work to be performed under these contracts involves, respectively, general construction; structural steel and miscellaneous metal; heating, ventilation and refrigeration; plumbing and drainage; electrical work; and restaurant kitchen equipment, all in connection with additions and alterations to the Service Buildings at Service Area 4N, located on the New Jersey Turnpike in Burlington County, New Jersey.

Sealed proposals will be received at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, on the morning of December 1, 1953, until 11:00 A.M., Eastern Standard Time, at which time and place said proposals will be publicly opened and read.

The receipt and opening of proposals are subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority.

Contract documents may be examined during office hours after November 2, 1953 at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey. Contract documents will be furnished upon deposit of Fifteen Dollars ($15.00) for each set, upon application to the Authority. The deposit will be refunded if the contract documents are returned in good condition to the Authority within fifteen (15) days after the receipt of proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

Bids: November 20, 1953

Cleaning, Refinishing, Oxidizing and Maintaining Interior and Exterior Bronze Port Authority Building and New York Union Motor Truck Terminal

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M-191
PROPOSAL NO. 270

Sealed proposals for furnishing all labor, material and equipment necessary for cleaning, refinishing, oxidizing and maintaining interior and exterior bronze at the Port Authority Building, 111-8th Ave., New York 11, and the New York Union Motor Truck Terminal, 325 Spring St., New York, will be received at the office of the Director of Purchase of The Port of New York Authority, Room 900, 111-8th Ave., New York 11, until 11:00 A.M. (E.S.T.) Friday, November 20, 1953, at which time and place said proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: November 17, 1953

Bus Shelter and Covered Walkway

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
PASSENGER TERMINAL
CONTRACT NA-170.057

Sealed proposals for the construction of a Bus Shelter and Covered Walkway adjacent to the Passenger Terminal at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1111, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, November 17, 1953, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1111, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

(See page 107 for Additional Proposals)

OFFICIAL PROPOSALS

Bids: November 19, 1953

New York State Road Work

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 19th day of November 1953, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 8				
		J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, New York				
Orange	FASH 53-15	Palisades Interstate Park-Goshen Pts. 1A & 1B; Central	5.94	9" Cem. Conc. Pavt. 2 @ 25' Var. Wide = 9.95 Mi.	$382,000	$6,947,000
	FARC 53-129	Valley-Turners, S.H. 115; Highland Mills-Monroe, S.H. 413; Monroe-Washingtonville, S.H. 9057	(Acc.) 6.94	Asp. Conc. Ty. 1A, Opt. = 2.85 Mi. Misc. Work = 0.08 Mi.	Plans $100	
		Project FI-IG-1050(7) Cont. #1, F-1050(8)	(Hy.)	5 Hy. Sups. Comp. I-Beams 217.2', 194.5', 175.8', 186.2 & 207.4' 2 Brs. Twin Box 25' & 25' 2 Brs. Comp. I-Beams 57' & 57' Altering Exist. R.R. Br.		
		DISTRICT No. 10				
		M. E. Goul, District Engineer, Montauk Highway at Little East Neck Rd., Babylon, L. I., New York				
Nassau	B.P. 53-51	Atlantic Beach Park District, Part 1	0.11	Beach Protection 3 Stone Groins	5% of Bid Plans $10	13,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

H. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: December 1, 1953

Ohio Turnpike Commission
139 East Gay Street
Columbus, Ohio

NOTICE TO BIDDERS
Contract C-41
Contract C-42
Contract C-41&42

Sealed proposals will be received by the Ohio Turnpike Commission at or before 10:00 A.M., Eastern Standard Time, December 1, 1953 for the performance of each of the contracts enumerated above.

The work covered by Contract C-41 consists generally of the construction of grading, drainage, structures and paving of approximately 3.9 miles in Construction Section 41 of Ohio Turnpike Project No. 1 beginning at a point about 200 feet east of the Portage River at Turnpike Centerline Station 336+35 in Ottawa County, Ohio and extending eastwardly to about 200 feet west of Hessville Road at Turnpike Centerline Station 132+00 in Sandusky County, Ohio and the construction of engineers' office buildings and facilities on or near the site of the work.

The work covered by Contract C-42 consists generally of the construction of grading, drainage, structures and paving of approximately 5.1 miles in Construction Section 42 of Ohio Turnpike Project No. 1 beginning at a point about 800 feet west of Camper Road at Turnpike Centerline Station 66+34 in Ottawa County, Ohio and extending eastwardly to about 200 feet east of the Portage River at Turnpike Centerline Station 336+35 in Ottawa County, Ohio, and the construction of engineers' office buildings and facilities on or near the site of the work.

The work covered by Contract C-41&42, which covers a combination of Construction Sections 41 and 42, is the construction as above and elsewhere herein generally described for the individual Construction Sections, taken together.

In Construction Section 41, the principal structures to be built are one reinforced concrete culvert, four single bridges and four twin bridges (each twin bridge consisting of two separate but nearly identical and parallel structures). All of these bridges are steel beam bridges supported on reinforced concrete abutments and bents. The abutments of six bridges are to be on steel piles and the abutments of two bridges are to be on rock. The bents of five bridges are to be on spread footings, the bents of two bridges are to be on steel piles and the bents of one bridge are to be on rock.

In Construction Section 42, the principal structures to be built are one reinforced concrete culvert, four single bridges and four twin bridges (each twin bridge consisting of two separate but nearly identical and parallel structures). All of these bridges are steel beam bridges supported on reinforced concrete abutments and bents. The abutments of six bridges are to be on steel piles, the abutments of one bridge are to be on spread footings, and the abutments of one bridge are to be on rock. The bents of all the bridges are to be on spread footings.

Approximate quantities of the major items of construction for Contract C-41 are as follows:

Roadway Excavation	200,000 cu. yds.
Borrow	720,000 cu. yds.
Structural Concrete	13,770 cu. yds.
Reinforcing Steel	1,845,000 lbs.
Fabricated Structural Steel	2,689,000 lbs.
10" Reinforced Concrete Pavement	105,000 sq. yds.

Approximate quantities of the major items of construction for Contract C-42 are as follows:

Roadway Excavation	170,000 cu. yds.
Borrow	470,000 cu. yds.
Structural Concrete	7,750 cu. yds.
Reinforcing Steel	1,408,000 lbs.
Fabricated Structural Steel	2,173,000 lbs.
10" Reinforced Concrete Pavement	140,000 sq. yds.

Copies of the Plans and General Specifications for said Contracts are immediately available for public inspection or purchase at the office of the Chief Engineer, Ohio Turnpike Commision, 139 East Gay Street, Columbus 15, Ohio. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are non-returnable:

General Specifications for Ohio Turnpike Project No. 1	$ 5.00
Plans (also soil profiles and boring logs), per set, per construction section	15.00
Cross Sections, per set, per construction section	25.00

Forms or copies of all remaining Contract Documents, including Proposals for each of the Contracts set forth above; the Affidavit which must accompany any such Proposal; this Notice to Bidders; the Special Provisions applying to said Contracts; the Contract to be entered into with the (or each) successful Bidder; and the Contract Bond to be furnished with such Contract, will be furnished upon request and without charge to any interested person at the aforesaid Chief Engineer's office.

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Each Proposal must be accompanied by a certified check or checks on a solvent bank or banks, payable to the order of the Ohio Turnpike Commission in an amount not less than $100,000 per Construction Section covered by the Contract on which the Bidder bids. If the Bidder shall tender bids for more than one Contract, said amount shall be not less than $100,000 per Construction Section covered by the Contracts on which he shall tender Proposals; provided, however, that if one or more Construction Sections are included in more than one Contract for which the Bidder shall tender Proposals, the Bidder need furnish only $100,000 per each such section, notwithstanding such duplication. The Commission may at any time cash any such check. Each such check or the proceeds thereof will be held by the Commission as a guaranty that, if any Proposal guaranteed thereby is accepted, a Contract will be entered into and the performance of the Proposal secured.

Each such check or the proceeds thereof will be returned or forfeited as provided in paragraphs G-3.03 and G-3.06 of the aforesaid General Specifications, provided that if there be a forfeiture, it shall be of an amount equal to $100,000 per Construction Section covered by the Proposal with respect to which the forfeiture occurs, and any excess will be returned to the Bidder.

All bids must be received at or before 10:00 A.M., Eastern Standard Time, December 1, 1953, in the offices of the Ohio Turnpike Commision, 139 East Gay Street, Columbus 15, Ohio. At said hour, the bid box will be removed to the Neil House Hotel, 41 South High Street, Columbus, Ohio, where all proposals will be publicly opened and read.

The award of any of the above-enumerated Contracts, if any award be made, will be to the Bidder or Bidders whose Proposal or combination of Proposals is lowest and best for the performance of the work, taken as a whole, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

OHIO TURNPIKE COMMISSION

Engineering News-Record

Reaches Your Local Contractors

Its distribution among the contractors of any one state is in proportion to the number of contractors situated in that state. The Official Proposal Columns of *Engineering News-Record* offer precisely the same efficient service to municipalities, counties, state and federal departments in every section of the United States.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED & INDIVIDUAL SELLING OPPORTUNITY WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.50 a line an insertion.

INFORMATION:
BOX NUMBERS count as 1 line additional is undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $17.10 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

Send NEW ADVERTISEMENTS: To New York City Office, 330 W. 42nd St., N. Y. 36 for November 19th issue closing November 9th

DESIGN ENGINEERS

With structural and concrete design experience applicable to Blast Furnace or Steel Plant Design.

Openings available at our Cleveland, Ohio office.

also

PIPING DESIGNERS

With experience applicable to Oil Refinery Design.

These openings offer:

Top Hourly Rates
Permanent Positions
Overtime—45 hour week
No Age Limitations

Write, giving complete background and experience to:

ARTHUR G. McKEE & CO.
2300 Chester Avenue
Cleveland 1, Ohio

SUPERVISING CONSTRUCTION ENGINEER

We have challenging opportunity for aggressive engineer interested in hard work and a real future with chemical company located in Detroit area. Candidates must be at least 35 years of age and have a college degree with 5 to 10 years experience in responsible charge of construction in chemical or petro-chemical plants. A friendly organization with excellent benefit program. Please submit complete details in first letter.

P-9585, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANT EXPERIENCED, STRUCTURAL STEEL, MISCELLANEOUS, & ORNAMENTAL IRON DETAILERS—CHECKERS
Excellent working conditions, highest salary. Permanent

CAPITOL STEEL & IRON COMPANY
1726 S. Agnew, Oklahoma City 8, Okla.

REPLIES (Box No.): Address office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED—BUILDING Construction Estimator —By old established North Jersey Company —Must be experienced with emphasis on Industrial Construction. Must have engineering background and be able to handle the complete estimate. Excellent Salary—Profit Sharing—Opportunity to advance—Age 32-42. P-9232, Engineering News-Record.

FOREMAN—SEWER and Water Works. Must be familiar with wellpoint work. Good opportunity for the right party. United Construction Company of Michigan. 320 Houseman Building, Grand Rapids 2, Michigan.

WANTED: EXPERIENCED estimator, engineering background preferable. Must be capable of take-off, pricing, scheduling, etc., Business located in South Dakota. Firm well established, progressive, in business since 1930. Salary open. P-9594, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT for large Middle West General Contractor. Must be able to take complete site management of institutional, industrial and commercial buildings of any size. Permanent connection. Please send full details of education, experience, age and other pertinent information, care of P-9557, Engineering News-Record, 520 No. Michigan Ave., Chicago, Ill.

MIDWEST ENGINEERING firm needs engineers experienced in highway and bridge design for permanent work on urban expressway projects. Reply giving full experience record, personal history and salary wanted. P-9602, Engineering News-Record.

WANTED: STRUCTURAL steel detailer and checker for small fabricating shop. Prefer married man of mature age with at least 5 years actual experience capable of making estimates and mill orders. Have attractive position to offer. Give resume of experience, age, and salary. Write Berger Steel Company, Lafayette, Indiana.

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HIGHWAY DESIGN Engineers—Must have background of experience in highway design and preparation of contract drawings. Large expressway project located in vicinity of Baltimore, Maryland. Furnish full information regarding education, experience, age and references. Starting salary six thousand two hundred forty dollars ($6,240.00 per year). Replies confidential. Associated Consulting Engineers, 1606 Kelly Avenue, Baltimore 9, Maryland.

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WANTED—PLUMBING and heating estimator with background in preparing estimates and checking equipment quotations to act as assistant to Chief Estimator. Northern New Jersey contractor. Man with field background as well as office experience required. P-9649, Engineering News-Record.

WANT ENGINEERS for construction work, Long Island area. Chief of Party, Instrumental man, Rod man, Engineer for office. P-9626, Engineering News-Record.

(Continued on the opposite page)

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P-9656, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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P-9435, Engineering News-Record
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(Continued on the opposite page)

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WANTED—SALESMAN to sell Office Trailers to Contractors. Must be experienced in selling to Contractors. Not over 40 years of age. Contact A. V. Williams, Box 145, Baltimore 29, Maryland.

SALES ENGINEER Wanted: Heavy Hardware manufacturing company requires Sales Engineer to call on contractors in New England. Good opportunity if able and willing. RW-9654, Engineering News-Record.

SEARCHLIGHT SECTION

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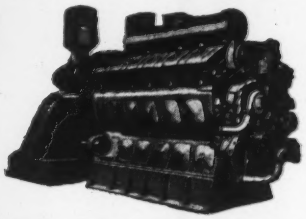

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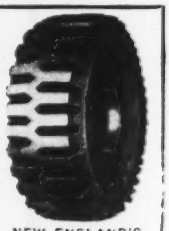

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Horizontal angles are measured by rotating the instrument and making final adjustments with the tangent screw located on the lower right side of the prism housing. Readings are taken through a microscope mounted adjacent to the telescope. The horizontal circle viewed through this microscope is etched on a glass plate with a least graduation interval of ten minutes. Like the vertical readings, interpolation to two minutes is possible.

Vertical mounting of the telescope with its inherent weight economy favored the use of a lightweight tripod. The support features sliding legs so that it may be collapsed to a conveniently carried 26½-in. length. A spring-mounted central thumbscrew, permanently fastened to the tripod head, is used to attach the instrument. Total weight of the tripod, including plumb-line, is only 3½ lbs.

The instrument itself weighs 2.3 lbs. and is 7 in. long with a greatest dia of only 2½ in. To protect the theodolite, a tubular carrying case is included. By a rather ingenious method, flanges on the cap and body of the case screw together to hold the instrument rigid inside the tube. Total weight of the theodolite, carrying case and tripod is only 6.4 lbs.

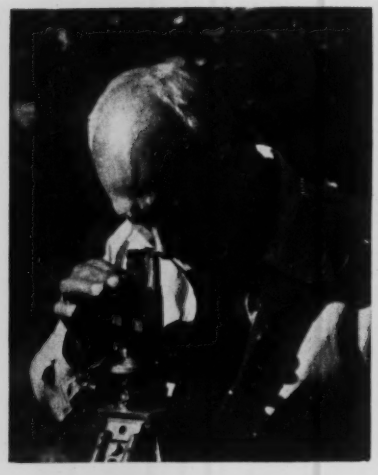
• **Fixed focus**—For speed of operation the telescope utilizes fixed focusing to produce a clear image from infinity to a minimum distance of 20 yds. In actual practice however clear shots are obtainable down to 5 yds.

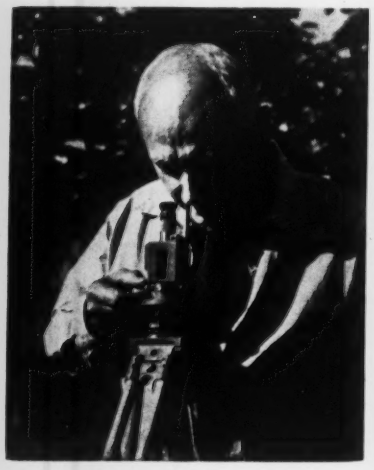
Focusing of the cross hairs is accomplished by revolving the telescope eyepiece. The microscope used to read the horizontal angles is focused in much the same manner.

Magnification of only five power results in a wide field of view of eight degrees. Stadia lines 1:20 and 1:50 are etched on the reticule.

• **Three-screw leveling**—Like many other European instruments, the T-12

BELOW LEFT, the elevation of the line of sight is adjusted by rotating the knurled ring below the eyepiece; CENTER, the tangent screw is used for fine horizontal adjustments; RIGHT, the instrument is fitted into the tubular carrying case.





*ECONOMIZES by using WROUGHT IRON in these VITAL SERVICES

This attractive overpass, one of the key grade separations in the New Orleans Union Passenger Terminal and Grade Crossing Elimination Program, was carefully designed to give maximum service and dependability. One evidence of this planning is the extensive use of wrought iron. In three vital services—blast plates, handrailings, and structure drains—the City of New Orleans economized by using over 300 tons of this time-tested material. G. A. Heft and Co., New Orleans, La., was the consulting engineer on the project; Farnsworth and Chambers, Houston, Texas, were the contractors.

Wrought iron is a veteran in each of these services. Its ability to withstand the effects of blast gases, and the "sand blasting" action of ash and cinder expelled at high velocity makes wrought iron an ideal choice for blast plate service. In handrailing and drain services, wrought iron's extra protection has been proved in installations everywhere. Another important feature of wrought iron's inherent resistance to corrosion is that it does not require frequent coats of paint. These superior performance qualities are responsible for wrought iron's wide acceptance by states, municipalities, and leading railroads.

You'll find some helpful information on these services in our bulletin, *Wrought Iron in Bridge Construction.* Write for a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Department: New York, N.Y.

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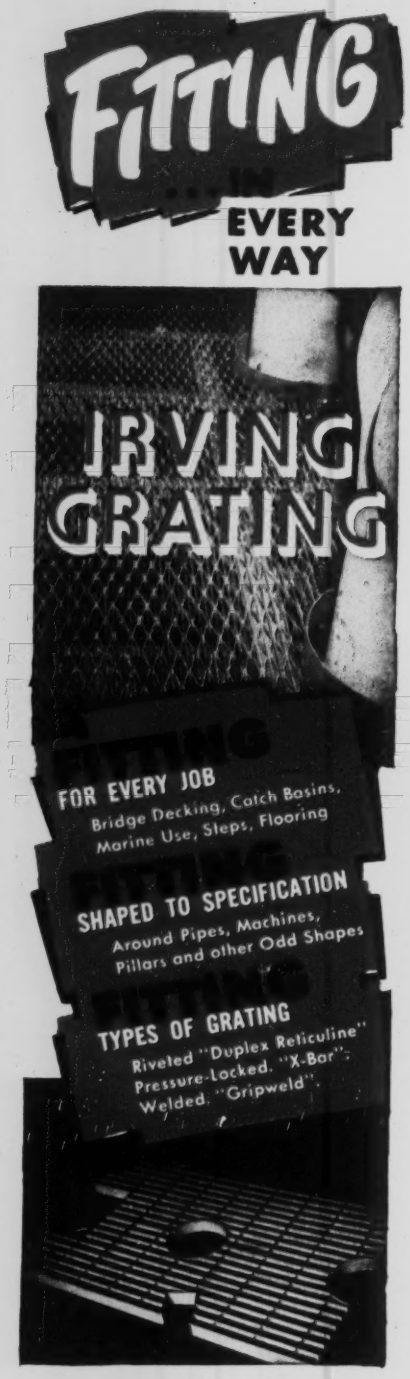
CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS



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IRVING SUBWAY GRATING CO., INC.
ESTABLISHED 1902

OFFICES and PLANTS at
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employs only three screws for leveling. However, operation is simple for all the instrument man need to do is to level up over two screws and then turn the spirit level 90 deg to complete the leveling process with the third screw.

• **Trouble free**—It is pointed out by the manufacture that the extremely light weight of the instrument plus the optical system employed results in less wear and therefore prolonged accuracy. The vertical prism is enclosed completely to seal out corrosive and wear-producing foreign matter. Further, since the instrument is adjusted and sealed at the manufacturing plant, it is claimed that frequent checking is unnecessary. It is said, too, that accuracy is maintained since the pressure and therefore the wear on the inner spindle and other supporting parts is slight. Price of the entire outfit—including the theodolite, tripod and carrying case is $315. HENRY WILD SURVEYING INSTRUMENT SUPPLY CO., MAIN & COVERT STS., PORT WASHINGTON, N. Y.

LEVELING THE T-12

Three-screw leveling is accomplished simply by lining up the level over any two thumbscrews, leveling by adjusting the screws in opposite directions and then turning the spirit level 90 deg to the leveled axis and completing the process with the remaining thumbscrew.

New heat pumps eliminate expansion and check valves

Expansion valves and check valves —both sources of trouble in early heat pumps—have been eliminated from two new Westinghouse models through the use of a specially designed metering tube.

The new units are all-electric, depending solely on air for the exchange medium. The smaller, 3 hp unit has a nominal heating and cooling capacity of 30,000 Btu per hr; the larger, 5 hp model is rated at 50,000 Btu.

Installation of the heat pumps requires only the connecting of electric power lines, a condensate drain and supply and return air ducts. Air ducts can return either under the floor at the bottom of the unit or through the side. The outside air connection is normally stubbed directly through an outside wall. The heat pumps may be installed back to the wall or in one corner if necessary; access is required only to the front for service adjustments to all components.

As with most heat pumps, the units are most adaptable to areas where the low temperature range is not extreme or of long duration. WESTINGHOUSE ELECTRIC CORP., AIR CONDITIONING DIV. DEPT. T-356, 200 READVILLE ST. HYDE PARK, BOSTON 36, MASS.

Modular spacing rule eases mason's work

Designed for spacing masonry work, the Lufkin #646 is marked on one side with a 16-in. repeating series of numbers that show the vertical coursing for concrete block and glass bricks, facing tile, economy brick and small facing tile, engineered brick, standard brick and Roman brick.

The first section is four inches long permitting the butting of the rule on the first 16-in. module. Since all the other sections of the rule are an even six inches long, it can also be used for spacing six and twelve-inch glass blocks.

The other side of the #646 rule is marked in consecutive inches to 16ths on both edges. THE LUFKIN RULE CO., SAGINAW, MICH.

(*New Products continued on page 120*)

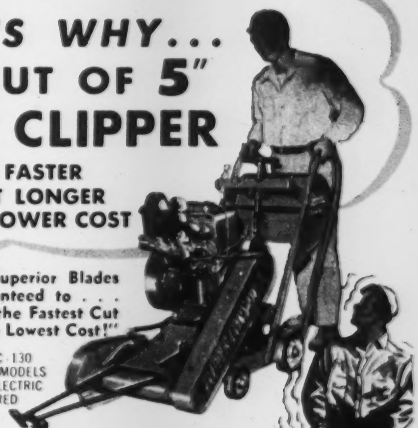
LOOK JOE! Clipper BLADES

HERE'S WHY... "4 OUT OF 5" BUY CLIPPER

- CUT FASTER
- LAST LONGER
- AT LOWER COST

MODEL HD
15 MODELS
PRICED FROM
$265

Clipper Superior Blades are guaranteed to . . . "Provide the Fastest Cut . . . at the Lowest Cost!"



MODEL C-130
ONE OF 5 MODELS
GAS OR ELECTRIC
POWERED

Clipper Superior Blades are manufactured under rigid control . . . assuring consistent quality. You are guaranteed peak performance . . . at the lowest possible cost with every blade.

ABRASIVE

DIAMOND

"CBR" Break-Resistant

CLIPPER BLADES to fit Every Make and Model Masonry – Concrete – Hand Power Saw

Your guarantee of the finest, fastest, most economical masonry and concrete cutting is the familiar Clipper Trade Mark on a Wet Abrasive — Dry Abrasive — "CBR" (Break-Resistant) — or a Diamond Blade.

ABRASIVES

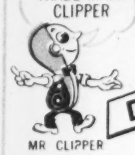
Any masonry material can be cut in seconds with either a "WET" or "DRY" specification. New type Clipper Abrasive Blades approach the cutting speed of diamonds.

DIAMOND

No other means of masonry or concrete cutting can equal the cutting speed of a Clipper Diamond Blade. Only Clipper has every necessary specification to do your cutting job.

"CBR" Break-Resistant

Drop – Bend – Twist . . . they're virtually unbreakable! 50% to 100% longer blade life on softer ranges of materials. Ideal for both masonry and hand power saws.



MR. CLIPPER

Today! **... try the NEW– Faster Cutting–Economical CLIPPER SUPERIOR BLADES**

Why guess about performance? Why experiment? Why take a needless loss? At our 24 locations you will find a Clipper Specialist who can tell you exactly which Clipper blade will give you the fastest cut at the lowest cost on your materials.

Nearly 20 Years Experience Behind *Genuine* CLIPPER PRODUCTS

The unqualified Clipper guarantee of satisfaction is backed by nearly 20 years of world-wide experience, the ability to select the finest materials and the "know-how" to put them together.

TRY A Clipper® MASONRY SAW OR CONSAW ON FREE TRIAL

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SAME DAY SERVICE FROM YOUR NEAREST FACTORY BRANCH—

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TAGLINE CONTROL

HERE'S WHY:

You get *more work* out of a bucket that holds steady and is back in position *quicker* for another bite. Rud-O-Matic Taglines have ample coil spring power to provide constant tension for steadying the largest clamshell buckets at any angle of the boom.

You get *lower costs* through faster operation coupled with Rud-O-Matic's trouble-free service. No pins, weights or tracks to get out of whack, only the simplest of working parts. Compact – and easy to install on any crane.

Rud-O-Matic Taglines are made in 8 models for all bucket sizes, and are supplied with cable and installation equipment. *Immediate delivery from your nearby equipment dealer – or send coupon below for details.*

I'd like more information on Rud-O-Matic Taglines. Send literature and complete details.

Name_____

Company_____

Address_____

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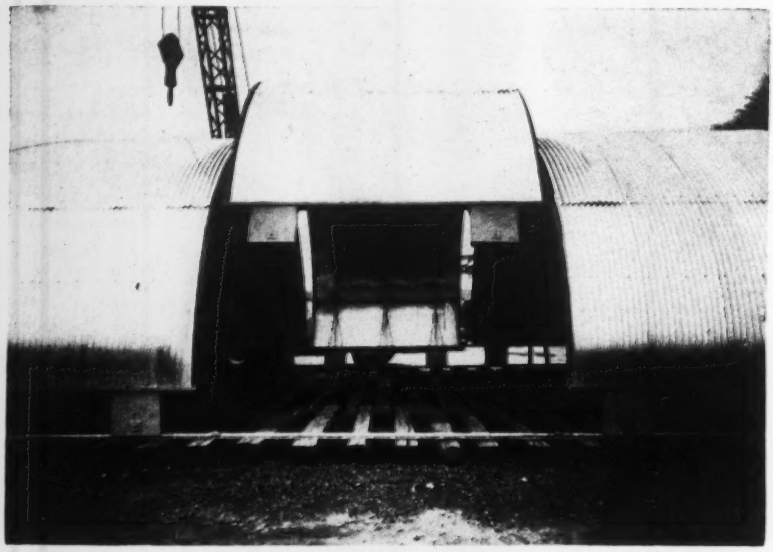
McCAFFREY-RUDDOCK
Tagline CORPORATION
2131 East 25th Street • Los Angeles 58, California



Shelters provide portable protection

Sectional shelters that may be lifted, tilted or rolled away for access may prove to be the answer to the problem of protecting materials and equipment from the ravages of weather.

The portable shelters are of the Quonset hut type—roughly hemispherical in cross section—and measure 25 ft wide and 12 ft long overall. Each section covers 288 sq ft of usable space and can be used alone or joined in tandem groups.

The basic unit consists of ribs and frame constructed of trussed and bridged tubing covered with corrugated metal or other material. In this form it is lifted and set down on its side channels by crane or other hoist. Tilting may be accomplished by hand windlass, lift truck, crane, etc. with corner posts used to hold the section in tilted position.

For increased mobility several wheel arrangements are available. For applications where the sections are to be used separately as cover, rubber-tired caster-type wheels are furnished to enable the section to be pushed and located at will.

The sections may also be equipped with grooved wheels installed in wheel boxes at the sides of the units. For most applications the wheels are grooved only enough to keep them centered on the round track, and the sides of the wheel box extend below the wheel to take the side strain when the section is tilted. Extension of these wheel box sides also provides a non-moving base when the shelters are telescoped or nested. A fully grooved wheel extending below the boxes is provided only when it is desirable to slide the section along over other sections as they are telescoped.

Four wheel boxes, axles and grooved wheels, together with two 12-ft lengths of track, are included in the $750 purchase price of each standard unit. It is suggested that the tracks be laid over ties or recessed in concrete for permanent use, but they may also be rested on the ground or wood blocks for temporary installations. A latch that may be released from either side secures the section to the rails. A latch with a lock is also available.

The ends of the sections are finished with a protective V-shaped molding that acts as a drip rim to catch rain or condensed moisture, running it off to the side channels. Rubber flaps under the joints provide a secondary seal.

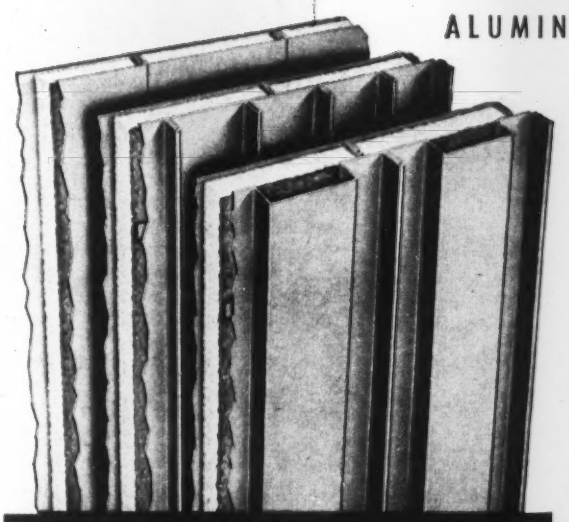
Where use or conditions require it, the deep frame accommodates thick insulating bats and the cross members are located so that they may accomodate insulating board or other lining for the interior without interfering with telescoping or nesting.

The standard section comes in a four-foot wide bundle of five 8 x 12-ft panels that are said to be readily assembled with hand tools by three men in one hour. As many as six fully assembled units may be transported—nested—on one truck. YARD-STOR SHELTER CO., 19256 JOHN R, DETROIT 3, MICH.

INSULATED METAL WALLS

for INDUSTRIAL and COMMERCIAL BUILDINGS

ALUMINUM, STAINLESS or GALVANIZED STEEL



FLUSH, RIBBED, or FLUTED
Over-all "U" Factor of Various Types is Equivalent to or Better than Conventional 16" Masonry Wall

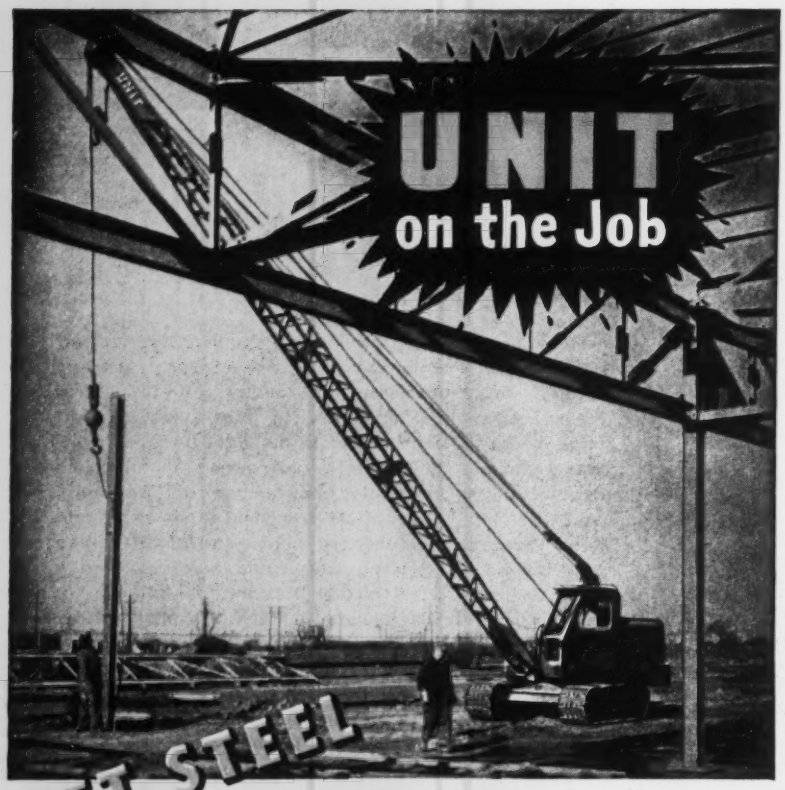
New industrial and commercial buildings constructed with insulated metal walls are appearing in every section of the country. Bright Aluminum and Stainless Steel exterior surfaces in complete manufacturing plants, powerhouses and office buildings clearly indicate the trend in modern construction. Enthusiasm of architects and owners is not confined to design effects obtainable and the over-all appearance of such structures . . . important economies in lower material cost, lower labor cost, and the accumulative advantages of reduced construction time resulting from rapid erection—even in sub-zero weather—were quickly recognized. Buildings can be quickly enclosed with insulated metal walls under low temperature conditions which would preclude masonry construction. Mahon Insulated Metal Walls are available in the three exterior patterns shown at left. The Mahon "Field Constructed" Fluted or Ribbed Wall can be erected up to sixty feet in height without a horizontal joint—a feature of Mahon walls which is particularly desirable in powerhouses or other buildings where high expanses of unbroken wall surface are common. See Sweet's File for information, or write for Catalog No. B-54-B.

THE R. C. MAHON COMPANY

Detroit 34, Mich. • Chicago 4, Ill. • Representatives in All Principal Cities

Manufacturers of Insulated Metal Walls and Wall Panels; Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms; Rolling Steel Doors, Grilles and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.

MAHON



SET STEEL - Easy and Fast with UNIT

Lifting, carrying and spotting steel girders into the exact position requires STABILITY — FLEXIBILITY and PERFECT CONTROL. A UNIT Crane gives you all these features . . . and more. Extra Long Crawlers — Multiple Hinged Shoes — Wide Axles and Hook Rollers provide perfect stability. Smooth accurate control of boom and hoist lines permits precision handling. UNIT'S FULL VISION CAB gives the operator excellent visibility . . . makes steel setting jobs easier and faster. UNIT equipment can be quickly and easily converted to handle a wide variety of work. To speed up your steel construction, investigate UNIT. Write for literature.

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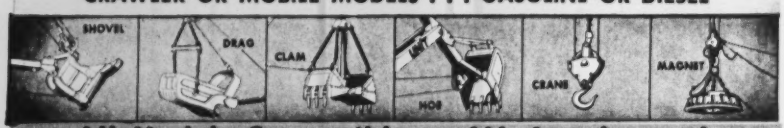
½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

PUBLICATIONS

Concrete handling and placing—A new publication departs from the standard manufacturer's catalog or bulletin format in tying together the use of equipment relative to the technical or "good practice" requirements of handling and placing concrete. The first 22 pages of the booklet deal with the use and selection of the proper equipment for handling and placing concrete. The final 18 pages include a specification check list, job conditions check list and various tables showing constants encountered in concrete work. Only a little more than a quarter of the manual is devoted to the manufacturer's products, which include such things as wheelbarrows, dump carts, floor hoppers, concrete buckets, collection hoppers, drop chutes, bin gates and unit batch plants. A few pages are devoted to unusual jobs solved by the company. Write for "Manual with Check List for Handling and Placing Concrete." Address the GAR-BRO MFG. CO., 2415 E. WASHINGTON BLVD., LOS ANGELES 21, CALIF.

Duct insulation—More than 40 photographs and drawings are used to describe the various rigid and flexible Fiberglas insulations for the exterior and interior for warm and cold air ducts. The 16-pager includes information about flexible duct liners, a product recently introduced by the company. Two pages of specifications are included at the end of "Fiberglas Duct Insulation." OWENS-CORNING FIBERGLAS CORP., 642 NICHOLS BUILDING, TOLEDO 1, OHIO.

Corrosion resistance—The results of 27 years of laboratory research and field study recently have been brought up to date in a new 28-page booklet, "Corrosion Resistance of Copper and Copper Alloys". The publication explains the chemical and physical nature of corrosive attack in its various forms. Included is a tabulation indicating the relative corrosion resistance of the principal types of copper and copper base alloys when in contact with the 183 different corroding agents. This recently-released, revised edition contains complete information on stress-corrosion cracking, galvanic corrosion, fresh and salt water corrosion. A section has been added on the subject of atmospheric corrosion, and the section on corrosion in petroleum refineries has been completely revised. Publication B-36R. THE AMERICAN BRASS CO., WATERBURY 20, CONN.

TRI-RIB STEEL ROOF DECK

—*covers large areas fast!*

GOES ON EASILY! Easily handled sheets of Tri-Rib are grooved for simple end-over-end attachment, quickly fasten to purlins by welding. Lengths up to 22 feet, in 18-inch widths, span up to 3 purlins.

COSTS LESS! Lighter, yet stronger, Tri-Rib actually costs less than comparable types of roof decking. And its lighter weight allows lighter supporting structure. A still *greater* savings for you!

SAVES STEEL! By reducing dead load as much as 22 lbs. per square foot, Tri-Rib permits use of fewer columns, shallower footings, eliminates need for sub-purlins.

CUTS MAINTENANCE! Tri-Rib Steel Roof Deck, properly installed, will last the lifetime of the building. Made of rugged, corrosion-resistant Cop-R-Loy Steel and further protected by a baked-on coat of Zinc Chromate Iron Oxide Primer, Tri-Rib requires virtually no up-keep.

Designed in accordance with specifications adopted by A.I.S.I. for light gauge structures, dated January, 1941. For specifications, consult Sweet's Files, or write us.

Metal Lath for Strength... Plaster for Beauty!

WHEELING CORRUGATING COMPANY • WHEELING, WEST VIRGINIA

ATLANTA BOSTON BUFFALO CHICAGO COLUMBUS DETROIT HOUSTON KANSAS CITY
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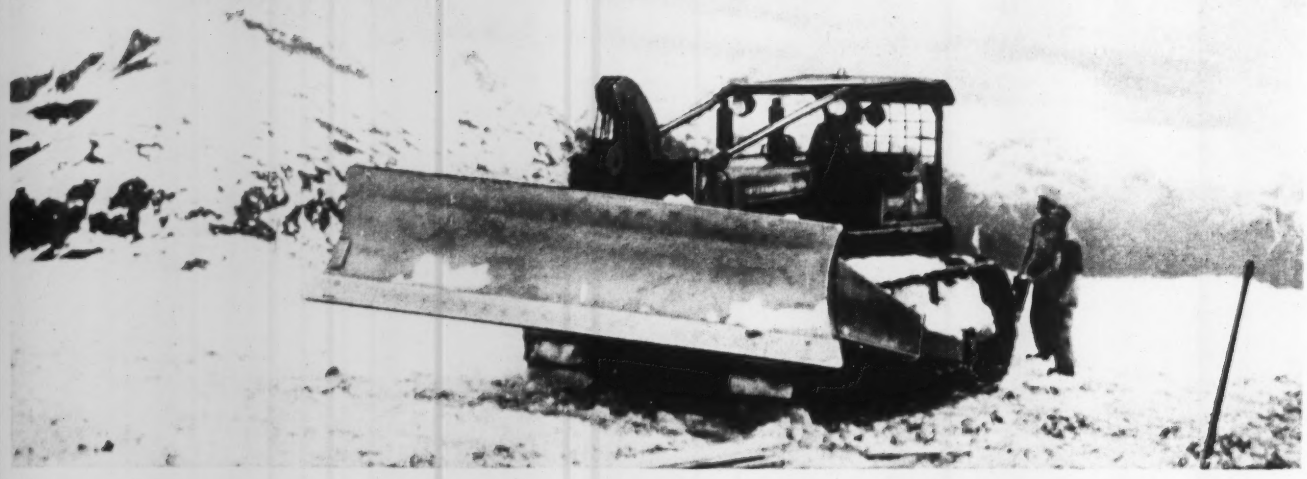
Wheeling

STEEL DOES IT BETTER...TRI-RIB DOES IT BEST!

ESTABLISHING MOUNTAIN-TOP BASE, a helicopter and a TD-24 put men, machinery and supplies on mile-high pass as first step in efforts to build road down to meet section coming up from each side. TD-24 pulled yarder, winch, and compressor into pass after bitter 7-day fight.

Big



1 RAISING KENNEY DAM to fill the Grand Canyon of the Nechako River, workers sluice down some of the 3.8 million cubic yards of earth and rock it will eventually contain. Dam will form a reservoir with twice the capacity of Grand Coulee. TD-24 in foreground strips blasted rock from canyon wall abutment.

2 HEADING OPERATIONS at Kenney Dam are (left to right) Alcan Resident Engineer Harry Jomini; General Superintendent "Hak" Nielsen and Project Manager Jack Bremner, both of Mannix, Ltd., sub-contractor for Morrison-Knudsen Company of Canada, Ltd. 110 miles west, dammed-up waters will be diverted through mountains and dropped a half mile to run turbines in sea-level powerhouse.

3 DRIVING TEN-MILE TUNNEL through mountain is done from four headings. Here, half a mile above ocean-level valley, aerial tramway has delivered TD-24 to tunnel portal for working debris down mountain. 2,600 feet below, eight-story powerhouse inside mountain is being mucked out by a TD-24 and a TD-9.

Red TD 24 Pioneers New Frontier

59 International TD-24s spearhead largest integrated engineering program in history for Alcan (Aluminum Company of Canada, Ltd.) on Project British Columbia

A fleet of 59 hard-hitting International TD-24s is blazing a new frontier across 5,000 square miles of wilderness in British Columbia.

Twenty-four hours a day, they're on the go for Morrison-Knudsen Company of Canada, Ltd., prime contractor for most of the giant development that includes:

Building the largest sloping clay core dam in the world

Driving a subway-size tunnel ten miles through a mountain

Blasting out an eight-story powerhouse two blocks long inside solid rock

Erecting a transmission line fifty miles long over a jagged mountain range

Raising the world's largest aluminum smelter and a new port city at Kitimat where 50,000 people may eventually live and work.

A. O. Strandberg, project manager for Morrison-Knudsen, says:

"These TD-24s are doing the impossible. We never thought any tractor could go where these tractors are working now. They have the weight, they have the balance, and they have the power to get the job done."

And here's what superintendents on the firing line say:

Bill Richards: *"They're pushing boulders uphill we had to dynamite in the old days."*

Herb Wilkinson: *"I wouldn't believe where they'd go until I got them on my crew."*

John Hutton: *"They're doin' work up here they were never built for but they're doin' it just the same."*

Your International Industrial Distributor can give you the facts and figures on the TD-24. See him. You'll be a TD-24 man from then on in!

INTERNATIONAL HARVESTER COMPANY • CHICAGO 1, ILL.

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POWER THAT PAYS

4 **INSPECTING MOUNTAIN TOP OPERATIONS** at Kemano, headquarters for construction of powerhouse, tunnels and transmission line are (left to right) A. O. Strandberg, Project Manager for Morrison-Knudsen; F. T. Matthias, Alcan Assistant Project Manager, and Walter Abrahamson, Alcan Assistant Resident Engineer at Kemano.

5 **LINKING UP POWER TRANSMISSION LINE ROAD,** a pair of TD-24s doze toward each other through blasted rock. Across 50 miles of rugged terrain like this, a mountain-anchored powerline will be built to flash abundant electricity from mountain powerhouse to smelter at tidewater.

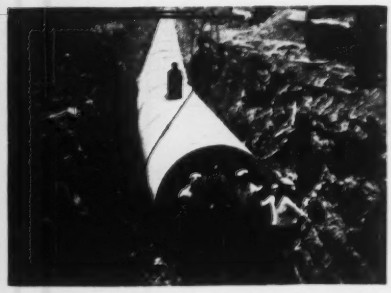
6 **NEW LAND IS MADE IN OCEAN INLET** by dredge which deepens anchorage for ocean shipping at the same time. H. M. Whiting (right), Project Manager for Kitimat Constructors, Ltd., and a superintendent study progress. Part of this 70 acres of new land will become site of new aluminum smelter. Town which may eventually become city of 50,000 will be built across the bay.

They all come back for more...

from LOCK JOINT

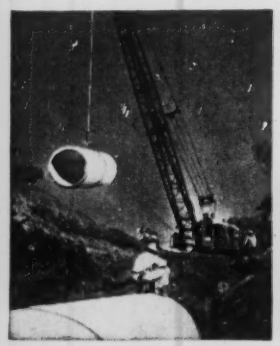
36" Lock Joint Reinforced Concrete Cylinder Pipe being installed for Norfolk, Va.

Laying 72" Lock Joint Reinforced Concrete Cylinder Pipe at Detroit, Mich.



YEAR AFTER YEAR satisfied customers turn and return to Lock Joint to solve their pressure pipe problems. The customers listed on this page have reordered Lock Joint Pipe from twice to more than forty times for the continuing construction of major water works installations . . . a total of nearly 1,500 miles of Lock Joint Pipe delivered on *reorders alone*. The variety of Lock Joint's designs makes the pipe suitable for any water works project requiring pressure pipe 16" in diameter or larger. Its low first cost, negligible maintenance charges, permanent high carrying capacity and unfailing service cause more and more water works officials to agree that "You can't go wrong with Lock Joint."

Laying 66" Lock Joint Reinforced Concrete Pressure Pipe for Tulsa, Okla.



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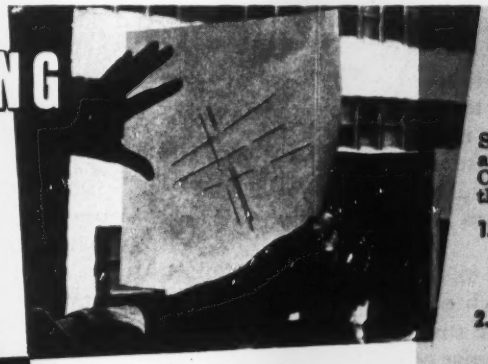

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EDITORIALS

Courage can end racketeering

THE CURRENT POLITICAL EXCITEMENT over labor racketeering in New York State (which started with the murder of a petty union boss, mushroomed into a sweeping investigation of harness racing, and finally reached into high places in state politics) points a particular lesson for construction. The lesson is the need for courage.

The political aspect of the case has now centered around Joe Fay—once a power in the operating engineers' union—whose activities to obtain payments for his services in averting labor trouble on New York City's Delaware Aqueduct earned him his present status as a resident of one of the state's prisons.

Despite the fact that he has been a prisoner for some years, it is clear that Fay still has power—enough so that politicians and many others considered it necessary to gain his aid in averting strikes. Nor is it obscure whence the power is derived—he must be aware of the location of a good many embarrassing skeletons in construction and political closets.

There is no point in arguing here the legal aspects of the Fay matter. That has been settled by the courts. The fact remains that Fay—and others like him—did not achieve his height of illegal activity without the active connivance, under whatever circumstances, of many others—contractors, labor people and politicians.

Construction is a particularly fertile field for this kind of thing. Because of its widespread, fast-shifting activity; because of provisions of contracts that put contractors into a squeeze such that they dare not risk delay; because of the myriad craft unions that make up its labor force—and because of plain, naked greed on both sides of the fence, it is vulnerable to a few unscrupulous men.

What's required here is courage—courage to stand up to such people and refuse to go along. Such events as the original arrest and trial of Fay, and the current unearthing of that odoriferous bit of business, give construction as a whole a very bad name. They shouldn't be permitted to happen. The only way to stop them is by policing—and courage—from within.

Lessons from a freeway opening

JUDGING FROM THE RECENT EXPERIENCE in San Francisco (ENR Oct. 29, p. 25), half a freeway is *not* better than none—unless adequate exit ramps are provided and traffic lights on the receiving streets are coordinated with the new traffic flow. Failure to provide these facilities, which resulted in a bad and highly publicized traffic jam on the city's Bay Shore Freeway, reflects poor planning that highway engineers elsewhere, faced with opening a street or freeway piece by piece, should take steps to avoid.

Motorist dissatisfaction is dangerous to highway development, because there are already too many opponents to adequate financing of adequate highways. Lack of funds may, in fact, be set down as the real cause of San Francisco's troubles—without minimizing the lesson of poor exit planning. For if the funds had been available to build the freeway rapidly and for its full length, instead of piecemeal, the necessity for coordinating completed portions temporarily into the existing street pattern would not arise.

This points to another lesson that highway engineers elsewhere should not overlook, namely, that step-by-step development of a highway facility should be avoided wherever possible. The time is rapidly approaching when it will be just as uneconomic to build half a freeway as it now is to build only half a bridge.

Frank Lloyd Wright says

FOR MORE THAN HALF A CENTURY architects have alternately fumed at and reveled in the caustic comments of Frank Lloyd Wright on things architectural. For example, he is reported to have remarked that he shudders when he comes to New York and sees the U.N. Building, and that he crosses to the other side of the street and shields his eyes when he has to pass the glass-walled Lever House skyscraper. It might be said that Mr. Wright's contributions to architecture—which are significant and substantial—consist as much in what he has said about it as in what he has done about it.

It was, therefore, an event of some importance last week when Mr. Wright paused in a TV interview to bestow one of his acrid comments on engineers. "An engineer," he said, "is only a rudimentary, undeveloped architect. He gets all he knows out of books, with the result that he knows how to build things and take them apart, but has no feeling for the intent or purpose of his structure."

In voicing these sentiments, Mr. Wright seems somewhat less than charitable considering the aid that engineers have given him on some of his projects. Nevertheless, like so many of Mr. Wright's remarks, this one about engineers contains a useful prod, for engineers would, in many cases, benefit from a better appreciation of the intent and purpose of their structures—from more proficiency in architecture. Conversely, of course, architects are better architects when they are more than "rudimentary, undeveloped" engineers, unschooled in the economic practicalities of design. Unless our estimate is wrong, both architects and engineers have, in recent years, been working quite consciously toward these goals—and also toward greater mutual respect for one another's professions than Mr. Wright seems willing to grant.

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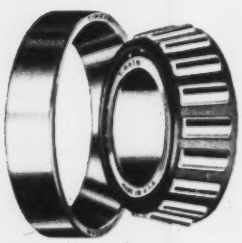

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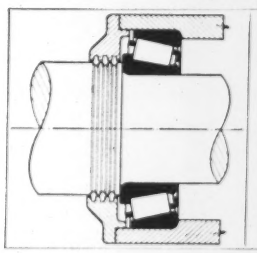

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